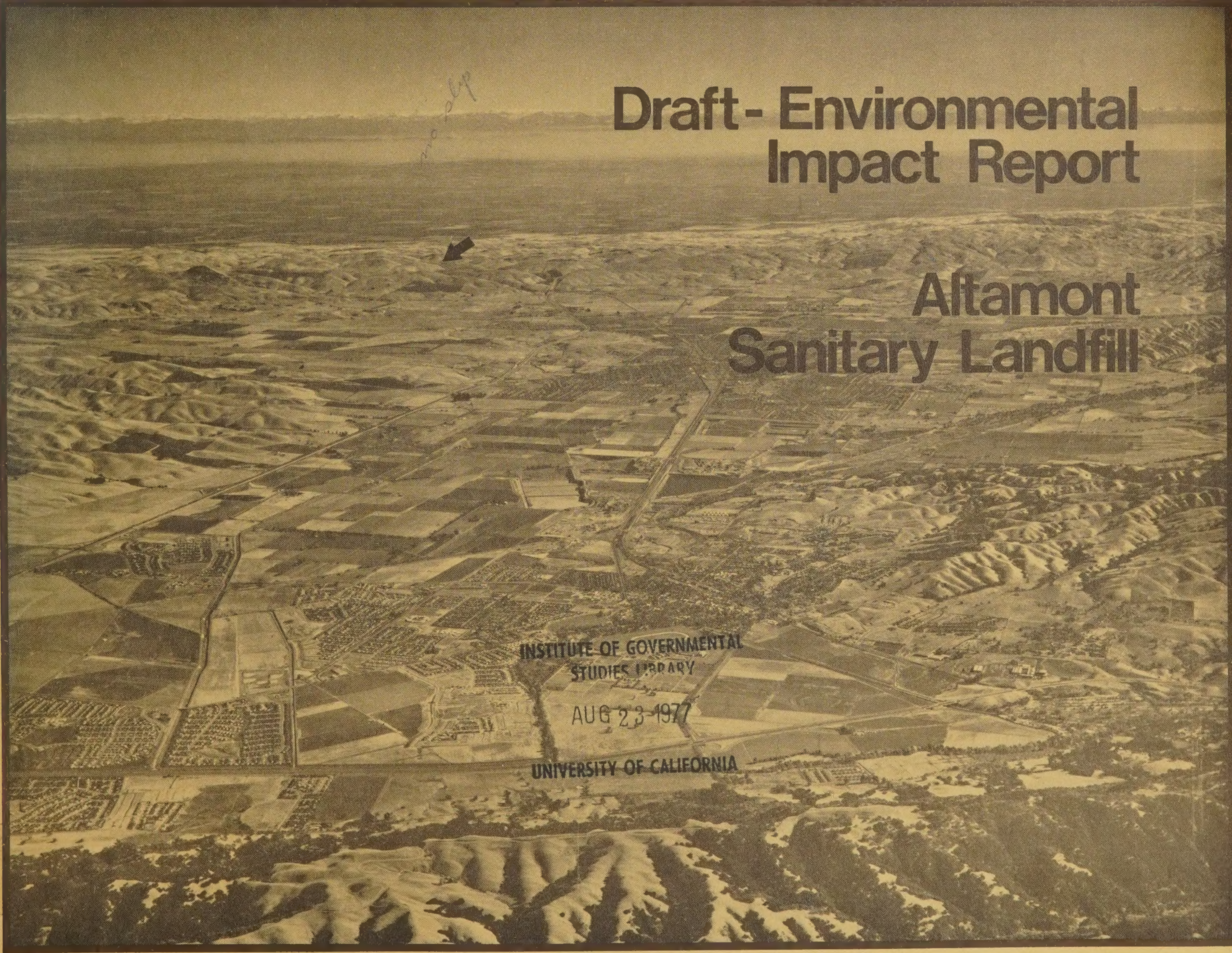
Draft- Environmental Impact Report

Altamont Sanitary Landfill



Cover photo by Pacific Aerial Survey, Oakland, CA
Date of photo: September 16, 1971

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Altamont Sanitary Landfill

Conditional Use Permit C-3010

December 1975

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Environ impact " "
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Alameda County
Planning Department
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(415) 881-6401

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TABLES

I. INTRODUCTION

The Alameda County Zoning Administrator has been requested to issue a Conditional Use Permit, C-3010, to permit construction and operation of a sanitary landfill which would function as a County-wide solid waste disposal operation serving 900,000 customers of the Oakland Scavenger Company. The landfill would be located on a 1,540 acre site in the Altamont Hills in the northeastern portion of unincorporated Alameda County (refer to the Regional, Area, and Vicinity Maps on the following three pages).

This environmental impact report is being prepared by the Alameda County Planning Department in accordance with the requirements of the California Environmental Quality Act (CEQA) of 1970, as amended, and State and County implementing guidelines, for consideration by the Zoning Administrator prior to action on the project. Bruce Fry and Adolph Martinelli are responsible for project direction and final editing. Text is by James Sorensen, project manager, Paul Deutsch, Ron Eggers, and Gerald Wallace. Graphics are by Vic Chapman.

The geology, soils and hydrology sections of the report were summarized and compiled by David W. Carpenter, Alameda County Engineering Geologist (C.E.G. #135).

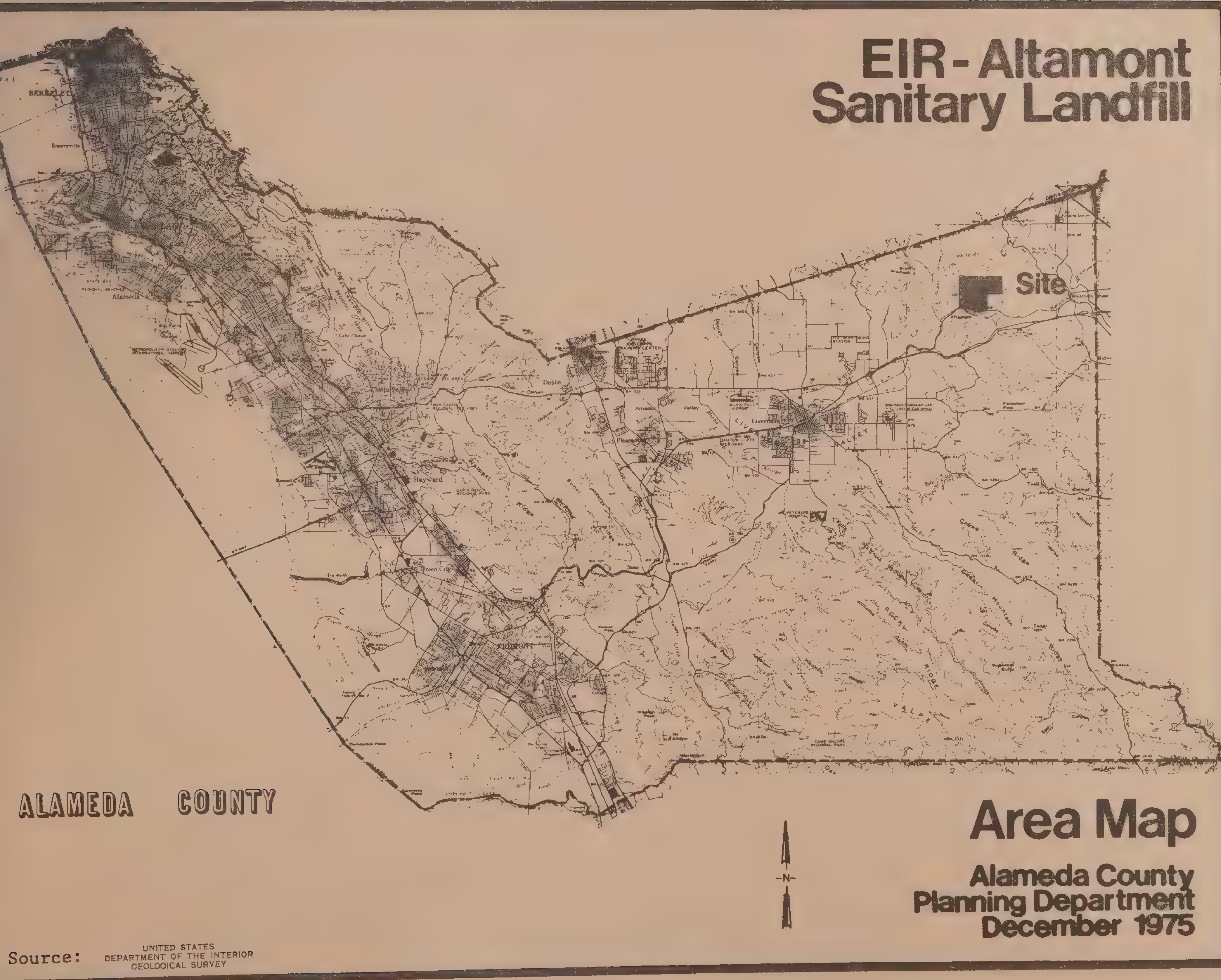
Portions of the report dealing with geology, soils, hydrology, biology, climatology, meteorology, archaeology, and traffic are based on information prepared respectively by Woodward-Clyde Consultants, Consulting Engineers, Geologists and Environmental Scientists; Philip Leitner, PhD., Consulting Biologist; Albert Miller, PhD., Consulting Meteorologist; David A. Fredrickson, PhD., Consulting Archaeologist, with Peter M. Banks, Associate; and John J. Forristal, Consulting Traffic Engineer (C.E. 15413). Project design was prepared by Bissell and Karn, Inc., Civil Engineers. Oakland Scavenger Company is record owner of the site.

EIR - Altamont Sanitary Landfill

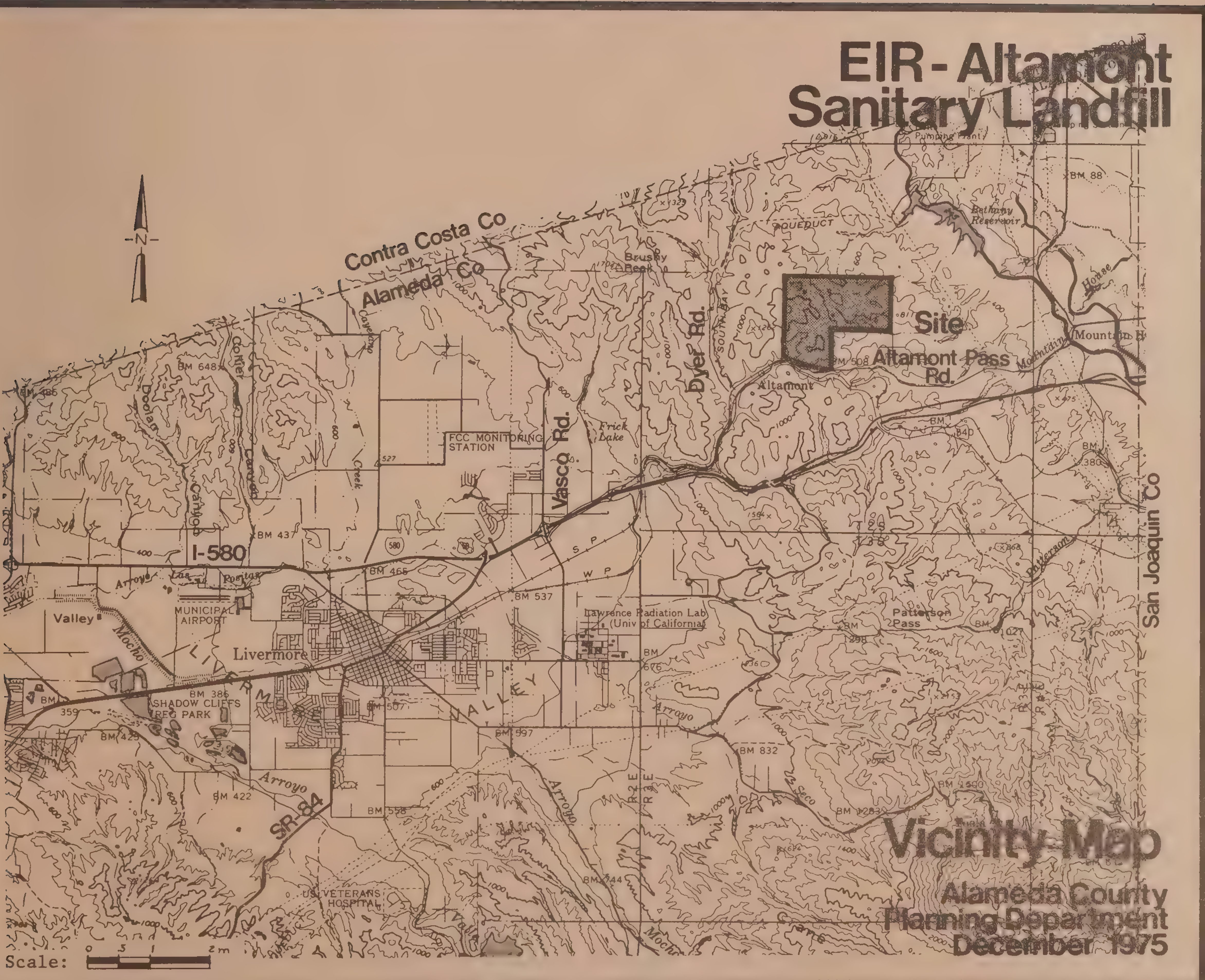
Regional Map

Alameda County
Planning Department
December 1975

Source: Larry Westdal



EIR - Altamont
Sanitary Landfill
Site
Berkeley
Emeryville
Alameda
Hayward
Union City
Fremont
Dublin
Livermore
Valley
ALAMEDA COUNTY
Area Map
Alameda County
Planning Department
December 1975
N
Source: UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY


EIR - Altamont Sanitary Landfill
Vicinity Map
Alameda County Planning Department December 1975
N
Contra Costa Co
Alameda Co
San Joaquin Co
Site
Altamont Pass Rd.
Altamont
Dyer Rd.
Vasco Rd.
I-580
SR-84
Livermore
LIVERMORE VALLEY
Valley
MUNICIPAL AIRPORT
SHADOW CLIFFS REG PARK
FCC MONITORING STATION
Lawrence Radiation Lab (Univ of California)
US VETERANS HOSPITAL
Patterson Pass
Bethany Reservoir
Pumping Plant
AQUEDUCT
Brushy Peak
Frick Lake
Mountain House
Scale: 0 .5 1 2 m

II. Project Description

The project consists of the establishment and operation of a major sanitary landfill on an approximately 1,540 acre site in the Altamont Hills in eastern Alameda County.

A. Altamont Sanitary Landfill

Oakland Scavenger Company has applied for a Conditional Use Permit to allow landfilling of solid waste, primarily in canyon areas, and the excavation of large quantities of earth from the site to cover the waste. Facilities required at the site for its operation will consist of an office and scale house, truck scale, corporation yard area, and fuel and water storage.

The waste to be disposed would originate in the Central Metropolitan and Eden Planning Units of Alameda County, which together accounted for 80% of the County's population in 1970. Included is the entire urbanized Bay Plain from Albany to Hayward, with the exception of the City of Berkeley. The initial rate of waste flow from these Bay Plain cities is estimated at 800,000 tons per year for 1977, when operations are planned to commence. Projections indicate a flow of 1,100,000 tons per year by the year 2000,[1] if population and per capita solid waste generation continue at present rates. Under that assumption, the site capacity would provide disposal space for 60-70 years. Of course, new technologies applied to resource and energy recovery of solid wastes could substantially reduce these estimates as they apply to actual amounts to be disposed of as landfill. The planned capacity of the site is approximately 110 million cubic yards, or 65 million tons.

The sanitary landfill is proposed to be operated as a Class II-1 site, under classifications adopted by the California State Water Resources Control Board. The tables on the following pages give the types of wastes permitted in, and criteria for, the various site classifications.

LANDFILL WASTES GROUPINGS

GROUP 1 WASTES

Group 1 wastes consist of or contain toxic substances and substances which could significantly impair the quality of usable waters. Examples include but are not limited to the following:

(a) Municipal origin
  (1) Saline fluids from water or waste treatment processes
  (2) Community incinerator ashes
  (3) Toxic chemical toilet waste
(b) Industrial origin
  (1) Brines from food processing, oil well production, water treatment, industrial processes and geothermal plants
  (2) Toxic and hazardous fluids such as cleaning fluids, petroleum fractions, acids, alkalies, phenols, and spent washing fluids
  (3) Substances from which toxic materials can leach such as ashes, chemical mixtures, and mine tailings
  (4) Rotary drilling mud containing toxic materials
(c) Agricultural origin
  (1) Pesticides or chemical fertilizers
  (2) Discarded chemical containers
(d) Other toxic waste such as compounds of arsenic, mercury or chemical warfare agents.

GROUP 2 WASTES

Group 2 wastes consist of or contain chemically or biologically decomposable material which does not include toxic substances nor those capable of significantly impairing the quality of usable waters. Examples include but are not limited to the following

(a) Municipal origin
  (1) Garbage from handling, preparation, processing or serving of food or food products
  (2) Rubbish such as paper, cardboard, tin cans, cloth, glass etc
  (3) Construction and demolition materials such as paper, cardboard, wood, metal, glass, rubber products, roofing paper, and wallpaper
  (4) Street refuse such as sweepings, dirt, leaves, catch basin cleanings, litter, yard clippings, glass, paper, wood and metals
  (5) Dead animals and portions thereof
  (6) Abandoned vehicles
  (7) Sewage treatment residue such as solids from screens and grit chambers, dewatered sludge, and septic tank pumpings
  (8) Water treatment residue such as solid organic matter collected on screens and in settling tanks
  (9) Ashes from household burning
  (10) Infectious materials and hospital or laboratory wastes authorized for disposal to land by official agencies, charged with control of plant, animal or human disease
  (11) Magnesium and other highly flammable or pyrophoric materials
  (12) Tires and rubber scrap
(b) Agricultural origin
  (1) Plant residues from the production of crops including but not limited to stalks, vines, green drops, culls, stubble, hulls, hulls, lint, seed, roots, stumps, prunings, and trimmings
  (2) Manures
  (3) Dead animals or portions thereof
  (4) Adequately cleansed pesticide containers

GROUP 3 WASTES

Group 3 consist entirely of nonwater soluble nondecomposable inert solids. Examples include but are not limited to the following:

(a) Construction and demolition wastes such as earth, rock, concrete, asphalt paving fragments, inert plastics, plasterboard, and demolition material containing minor amounts of wood and metals.
(b) Industrial wastes such as clay products, glass, inert slags, asbestos, inert tailings, and inert plastics.

Groupings as adopted by the California State Water Resources Control Board, March 2, 1972.

Source: Subchapter 15 of the Administrative Code of the State of California adopted March 2 1972

CLASSIFICATION OF WASTE DISPOSAL SITES

CLASS I DISPOSAL SITES

Those sites at which complete protection for the quality of ground and surface waters and public health and wildlife resources is provided for all time from waste deposited therein. These sites are designated as capable of accepting for disposal Groups 1, 2, and 3 wastes. The following criteria must be met for qualification as Class I.

(a) Geological conditions are naturally capable of preventing vertical hydraulic continuity between liquids and gases emanating from the waste in the site and usable surface or ground waters.

(b) Geological conditions are naturally capable of preventing lateral hydraulic continuity between liquids and gases emanating from wastes in the site and usable surface or ground waters, or the disposal area has been modified to achieve such capability.

(c) Underlying geological formations which contain rock fractures or fissures of questionable permeability must be permanently sealed to provide a competent barrier to the movement of liquids or gases from the disposal site.

(d) Inundation of disposal areas shall not occur until the site is closed in accordance with requirements of the regional board.

(e) Disposal areas shall not be subject to washout.

(f) Leachate and subsurface flow into the disposal area shall be contained within the site unless other disposition is made in accordance with requirements of the regional board.

(g) Sites shall not be located over zones of active faulting or where other forms of geological change would impair the competence of natural features or artificial barriers which prevent continuity with usable waters.

(h) Sites made suitable for use by man-made physical barriers shall not be located where improper operation or maintenance of such structures could permit the waste, leachate, or gases to contact usable ground or surface water.

(i) Sites which comply with a, b, c, d, e, f, g, and h but would be subject to inundation by a tide or a flood of greater than 100-year frequency may be considered by the regional board as a limited Class I disposal site.

CLASS II DISPOSAL SITES

Those sites at which protection to ground and surface waters and public health and wildlife resources is provided from Groups 2 and 3 wastes.

Class II-1 sites are those overlying usable groundwater, and natural geologic conditions are capable of preventing hydraulic continuity between liquids or gases and usable water, or the disposal site has been modified to achieve such capability.

Class II-2 sites are those having hydraulic continuity with usable ground water but geologic and hydraulic feautres assure protection of water quality. Such features might include soil type, artificial barriers, or sufficient depth of ground water.

The following criteria must be met for qualification as Class II.

(a) Disposal areas shall be protected by natural or artificial features so as to assure protection from any washout and from inundation which could occur as a result of tides of floods having a predicted frequency of once in 100 years.

(b) Surface drainage from tributary areas shall not contact Group 2 wastes in the site during disposal operations and for the active life of the site.

(c) Gases and leachate emanating from waste in the site shall not unreasonably affect ground water during the active life of the site.

(d) Subsurface flow into the site and the depth at which water soluble materials are placed shall be controlled during the construction and operation of the site to minimize leachate production and assure that the Group 2 waste material will be above the highest anticipated elevation of the capillary fringe of the ground water. Discharge from the site shall be subject to waste discharge requirements.

CLASS III DISPOSAL SITES

Those sites at which protection to water quality is provided from Group 3 wastes by location, construction, and operation which prevent erosion of deposited material.

Classification as adopted by the California State Water Resources Control Board, March 2, 1972.

Source: Subchapter 15 of the Administrative Code of the State of California adopted March 2, 1972

EIR - Altamont Sanitary Landfill

Schematic Sanitary Landfill Operation

Alameda County
Planning Department
December 1975

Source: Larry Westdal
[redacted]

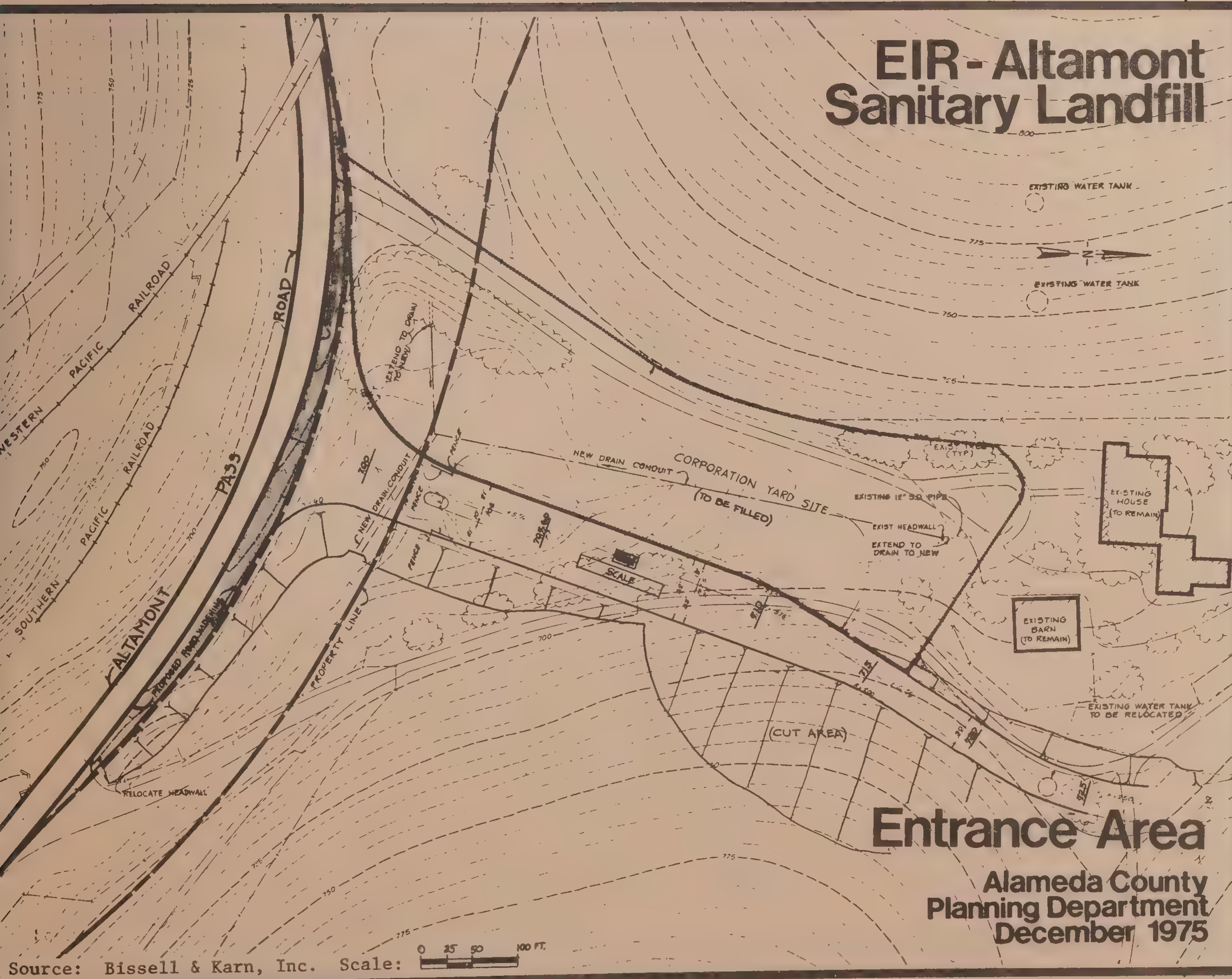
B. Operations

The following two sections are based largely upon Oakland Scavenger Company's Project Report (see references).

As shown on the map entitled "Entrance Area" on Page 10, project access will be at the existing ranch entrance located near the southwest corner of the property. Here, Altamont Pass Road is proposed to be widened to provide a left turn lane for transfer truck stacking clear of through lanes on Altamont Pass Road. A front gate will be provided which can be locked after hours and an attendant will reside on the property. A truck scale and scale house will be located just inside the entrance. The on-site road leading to the fill areas will be paved. The existing depression at the entrance will be filled (at its deepest point approximately 20-25 feet) to accommodate this new road and the adjoining corporation yard area. Facilities in the corporation yard include a 200 sq. ft. office, equipment repair shop, fueling stop and fuel storage tank, an area for exterior wash down of trucks and equipment, and an equipment parking area. The entrance and corporation yard will be landscaped with screen planting along the Altamont Pass Road frontage.

The basic plan is to fill canyon areas while using excavated material from hilltops and sideslopes to cover the waste. Fill areas will cover approximately 710 acres of the 1,540 acre site, and borrow areas for earth cover material will encompass approximately an additional 360 acres (refer to the "Site Plan" on Page 11).

In this sanitary landfill operation, waste would be unloaded from the transfer truck, or other vehicle, at the base of the working face, the inclined surface on which this waste is spread and compacted by bulldozer, as shown on the "Schematic Sanitary Landfill Operation" illustration. The face, which may vary in length from 100 to 200 feet, rises about 20 to 25 feet on an approximate three to one slope (horizontal to vertical ratio). The earth used for a cover layer at the end of each day's operations will be obtained from excavation on the site. Bulldozers and scrapers will be used to excavate and place the earth cover.

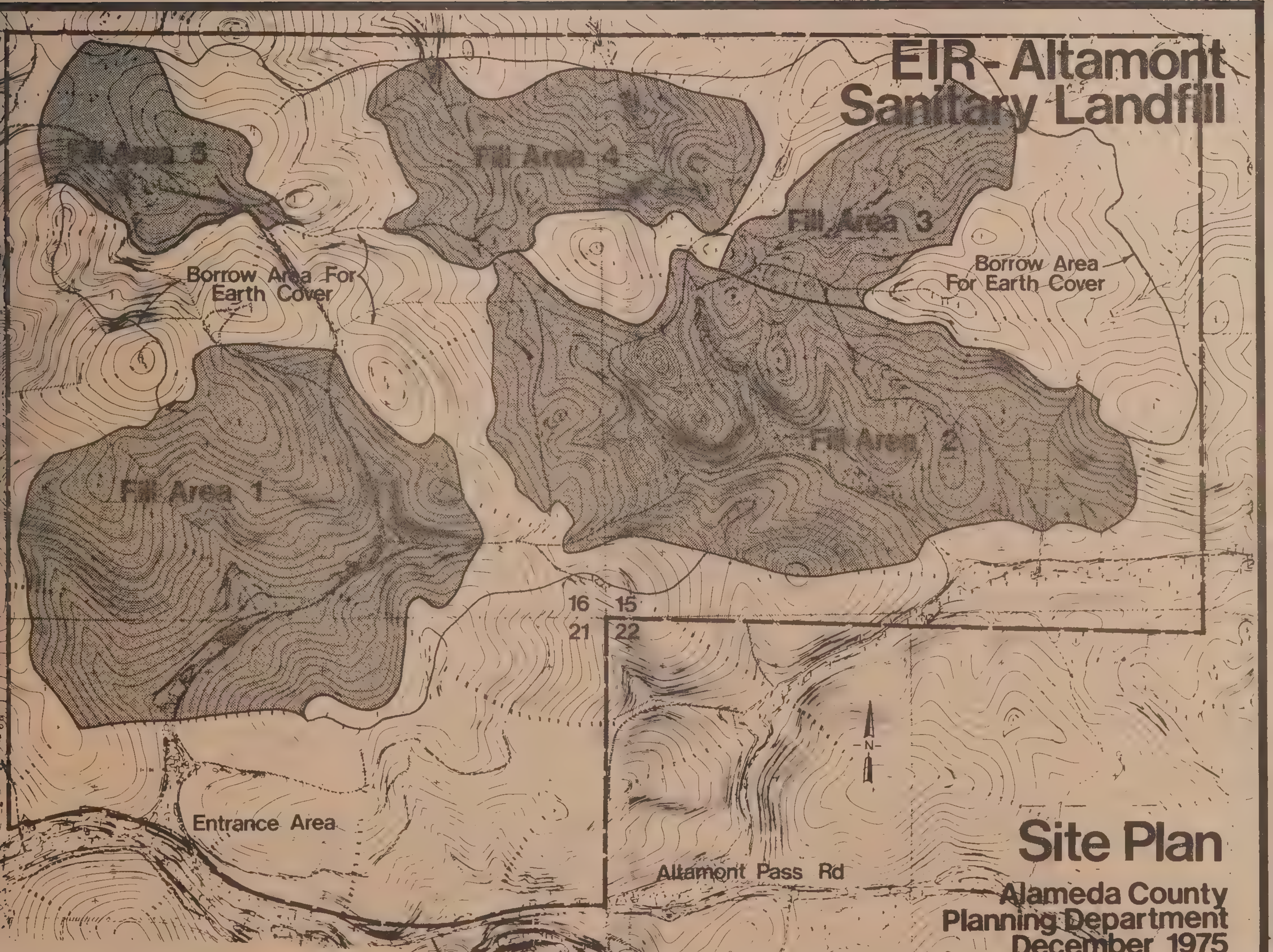


EIR - Altamont Sanitary Landfill

Entrance Area

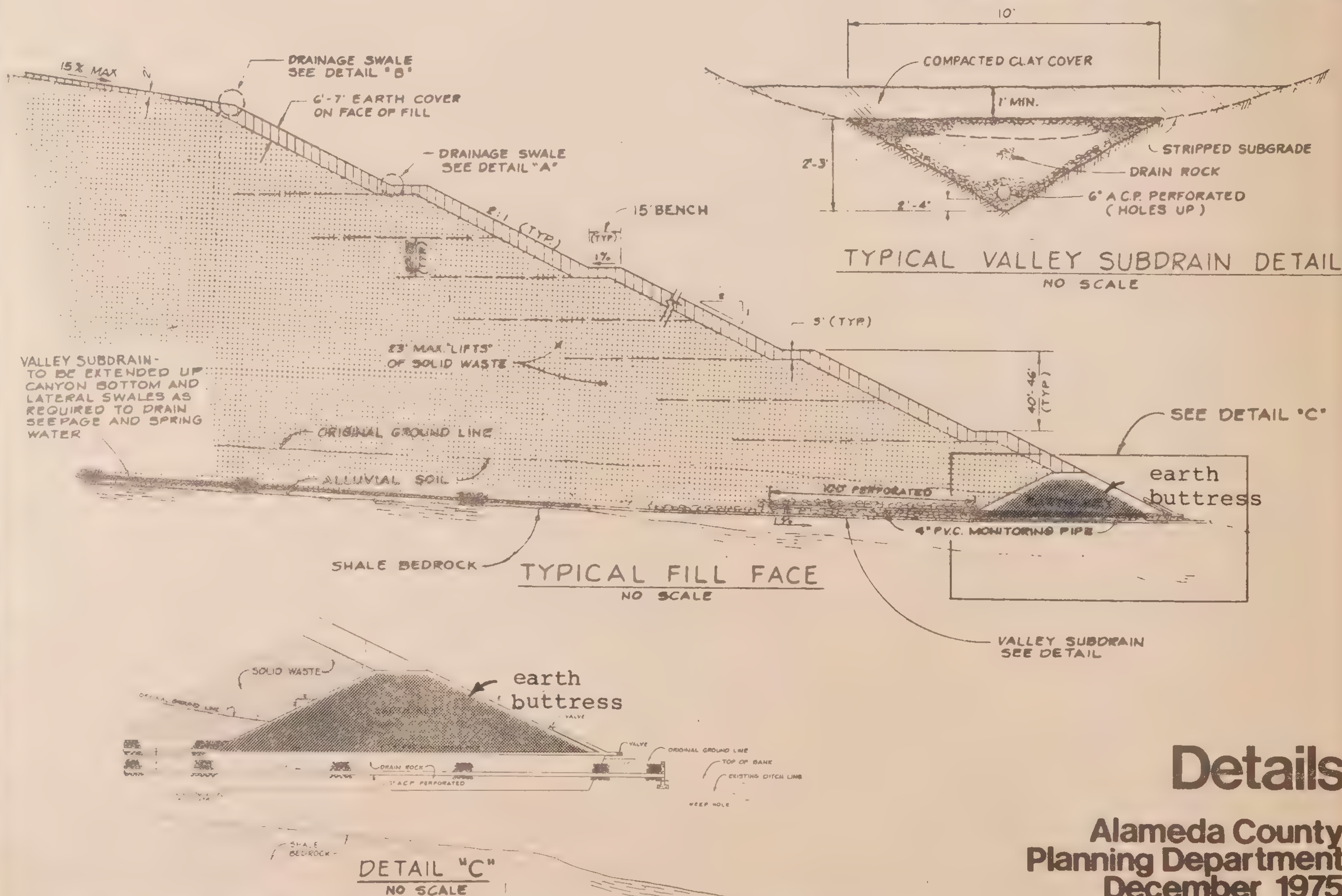
Alameda County
Planning Department
December 1975

Source: Bissell & Karn, Inc. Scale:



Source: Bissell & Karn, Inc. Scale: 0 200 500 1000

EIR - Altamont Sanitary Landfill



Source: Bissell & Karn, Inc.

Details

Alameda County
Planning Department
December 1975

Although filling will ultimately take place over much of the site, the actual filling operations at any one time are generally confined to 100 acres or less. Agricultural uses will continue over the remainder of the site.

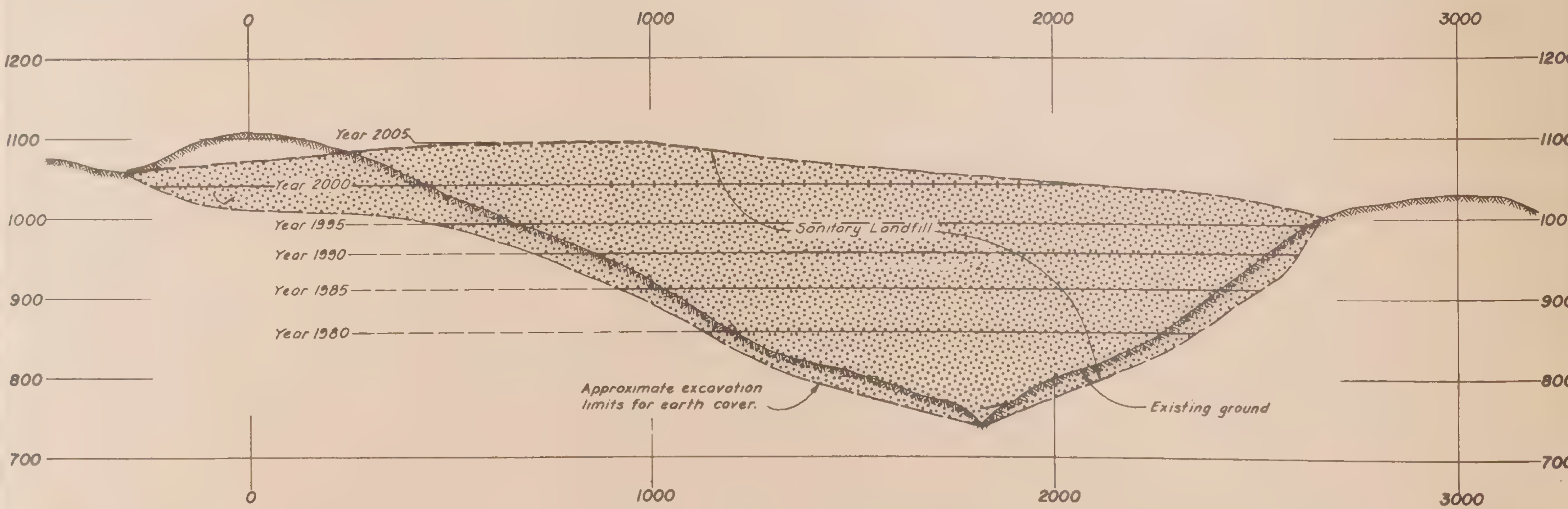
Filling will typically be done in the canyons. An earth buttress, as shown on the illustration on the following page, will be placed at the bottom or toe of the hill at the point in the canyon where the fill will begin. The filling process will work up the canyon, raising the fill height uniformly and creating a fill face. Completed fill areas will have a two-foot-thick final covering of earth and will be returned to agricultural use. The operation will then move to the next canyon area.

Initial fill operations will take place in Fill Area 1 as shown on "Fill Area 1 Plan" and "Section" on the following pages. The paved access road will be constructed to the toe of this fill, with temporary roads used beyond that point within the fill limits. As lifts are completed, the paved access road will be extended up and around the face of the fill until approximately elevation 800 is reached. The road will then be constructed up and around the hilltop west of that face, and access will then be gained from the west side of the fill until the fill is completed. The paved road will then be extended across the completed Fill Area 1 to the east and north to serve Fill Area 2, and then Fill Areas 3, 4, and 5 in that order. With the exception of Fill Area 1, there are no over-riding reasons for following this particular order of filling and operating experience on the site may indicate reasons for changing this order.

In excavating earth cover, emphasis will be placed on maximizing excavation within the "footprint" of the Fill Areas. With this procedure, the extent of borrow areas located outside the limits of fill will be minimized to provide primarily the borrow required for the final 2 feet of earth cover on the fill. Approximate limits of borrow are shown on the "Site Plan."

Cut slopes within the limits of fill that will ultimately be covered by fill are proposed to be no steeper than 1 horizontal to 1 vertical, and may be flatter where recommended by the soils consultant. Face of fill slopes and cut slopes expected to be visible upon completion of filling, would be no steeper than 2 horizontal to 1 vertical, and may be flatter where recommended by the soils consultant.

EIR - Altamont Sanitary Landfill



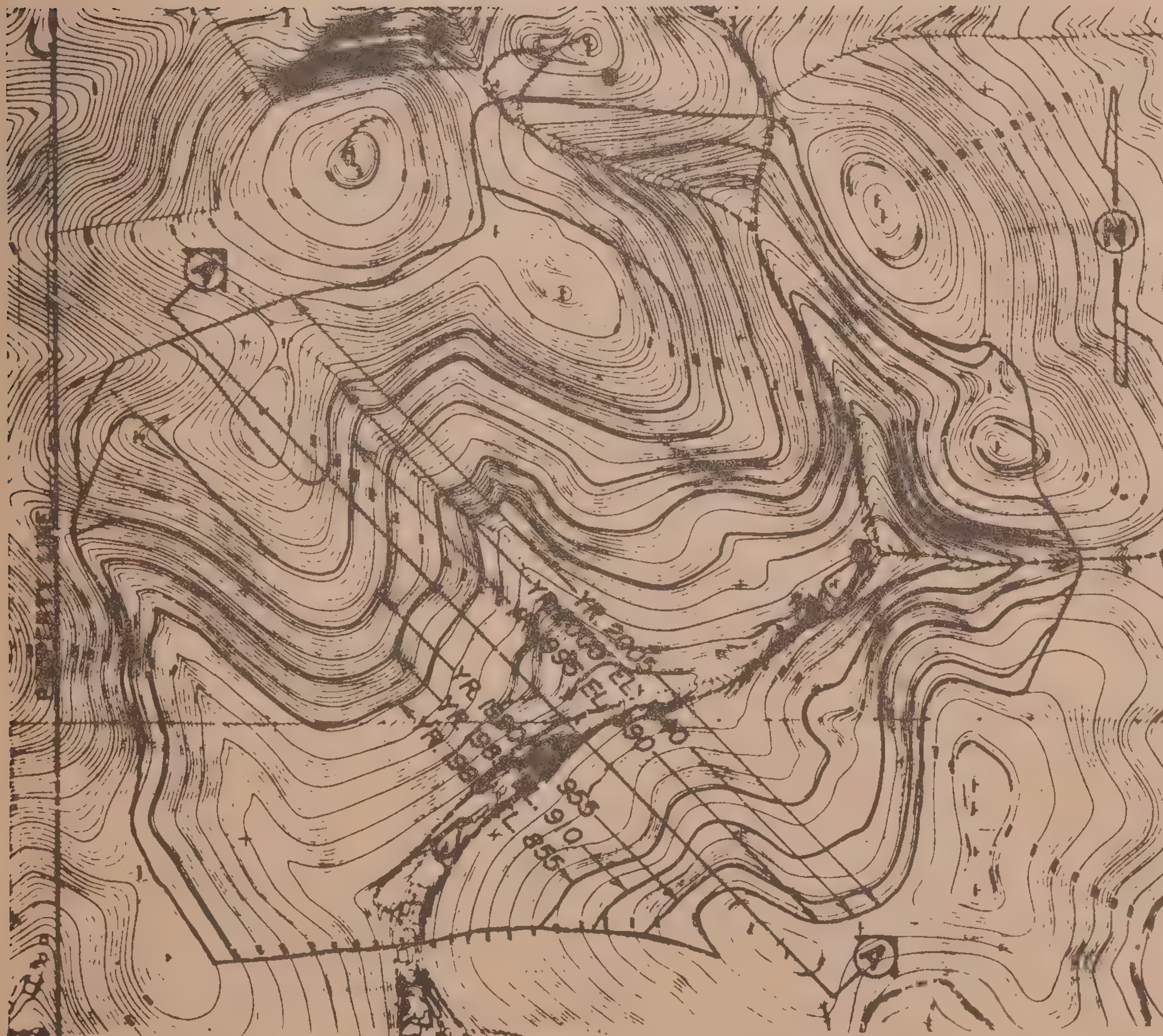
Fill Area 1 Section A-A

Fill Sequence: 5 Year Intervals

Alameda County Planning Department December 1975

Source: Bissell & Karn, Inc. Scale: HORIZ. 250' 500' VERT. 100' 200'

EIR - Altamont Sanitary Landfill



Fill Sequence: 5 Year Intervals

Fill Area 1 Plan

Alameda County
Planning Department
December 1975

Source: Bissell & Karn, Inc. Scale:

Public disposal would also be permitted at the site. Operations normally will be conducted during daytime hours. Movable fences will be used in the immediate fill area to control paper and litter, and sprinkling will be used to control dust.

Traffic along Altamont Pass Road generated by the project will include transfer trucks and other commercial and private vehicles. The equipment needed at the landfill will include bulldozers and scrapers to move dirt, landfill compactors, a motorgrader to grade roads, and water trucks to control dust on the access road.

C. Context of Project and Operations

The Altamont Sanitary Landfill is one element in a larger program proposed by Oakland Scavenger Company to deal with management of Alameda County's solid wastes. The other facilities in the program are:

- San Leandro collection/transfer station with ferrous metal recovery
- A fleet of long-haul transfer vehicles
- Future collection/transfer station with ferrous metal recovery processes located in the Hayward area
- Future additional resource recovery and energy recovery at the San Leandro facility

The San Leandro facility will receive solid waste collected from Bay Plain communities, where it will be crushed and placed into transfer trucks. Initially, household waste and demolition refuse will be loaded for transportation to the Altamont site. Planned resource recovery operations will first include only ferrous metals; operations will later be expanded to recover nonferrous metals. Ultimately, glass would also be recovered. Although there are no specific plans to do so at the present time, energy recovery from solid wastes is under study by Oakland Scavenger, Pacific Gas & Electric Company, and East Bay Municipal Utility District. It has the potential to utilize 29% of the County's solid waste to generate as much as 5% to 10% of the residential energy demands of the East Bay.

High capacity, large volume bulk transfer vehicles will be used to transport wastes between the San Leandro transfer station and the project site. Twenty-five to thirty trucks with trailers designed for solid waste would be used. The trailer units are 50 feet long (60 feet overall, including the truck cab) and have a carrying capacity of 130 cubic yards with payloads of approximately 23-24 tons capacity. Each unit will be self-unloading with a built-in conveyor-type moving floor. The vehicles' route will follow Davis Street in San Leandro approximately 3/4 mile to the Nimitz Freeway, then south on the Nimitz and east along Route 238 and Interstate 580 to Altamont Pass Road which leads three miles to the site as shown on the Transfer Truck Haul Route Map on the following page. The return trip will use the same route.

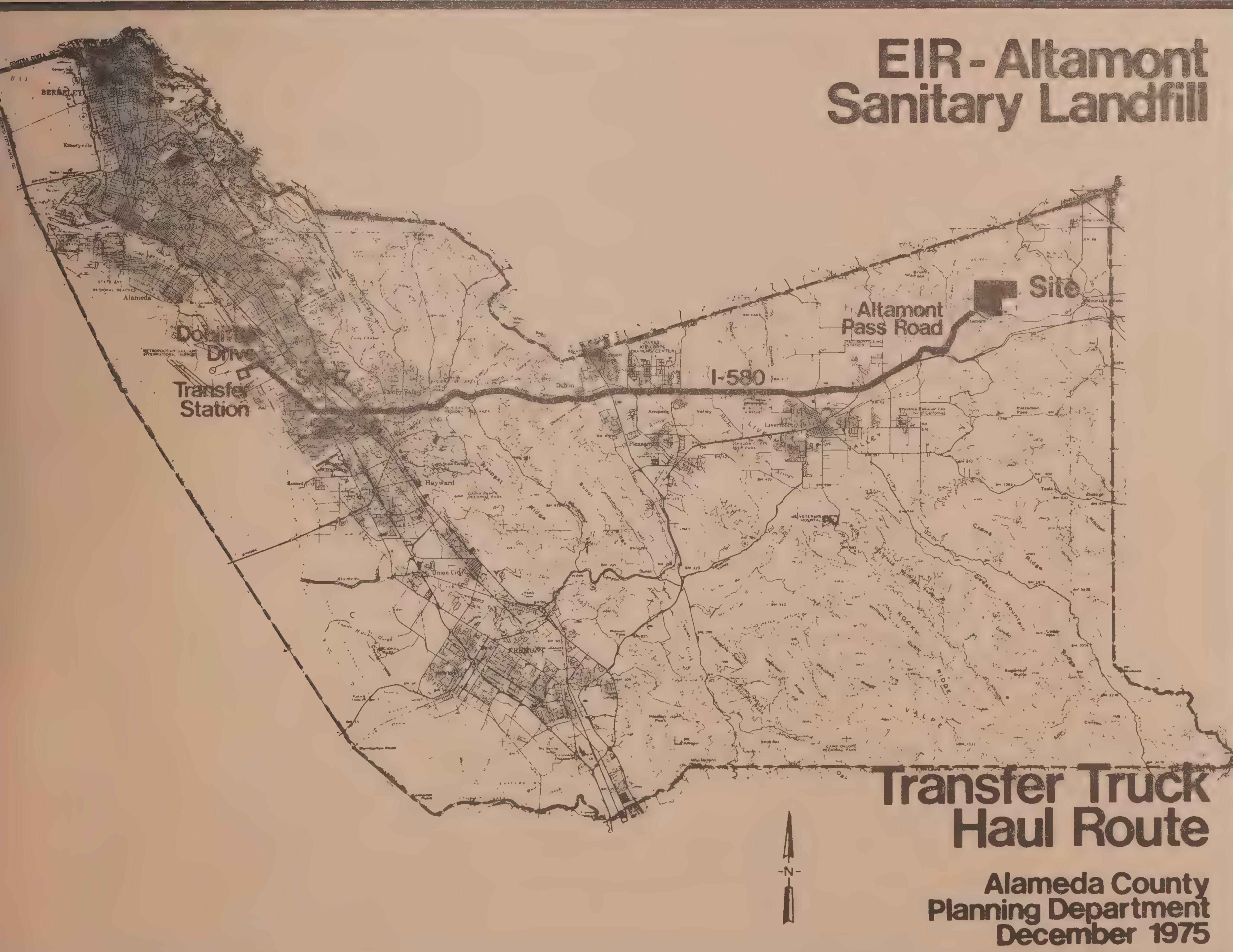
III. Environmental Setting

A. Location (Regional Setting)

The site comprises approximately 1,540 acres (2.4 square miles) in the Altamont Hills of northeastern Alameda County. The Altamont Hills are a part of the Diablo Range and separate the Livermore Valley from the San Joaquin Valley. The site vicinity is a sparsely populated area, the nearest population center being the City of Livermore, 8 miles west of the site. The site is located within Sections 15, 16 and the northern half of Section 21 in the Township and Range T2S, R3E, about 2 miles north of Interstate 580. Altamont Pass Road and the Western Pacific and Southern Pacific Railroad rights-of-way are adjacent to the southwestern boundary of the property. Dyer Road and the South Bay Aqueduct are approximately one mile west of the site. Bethany Reservoir, a part of the California Aqueduct System, is located about one mile northeast of the site (see Vicinity Map, page 4).

B. Site

The dominant landform of the site consists of treeless rolling hills. Drainage is predominantly to the northeast into the San Joaquin Valley. Streams are small and intermittent, flowing only during and after winter rainstorms. Ground surface elevations range from about 437 feet to 1,258 feet above sea level. Six stock watering ponds, two ranch houses and associated structures, and an abandoned wooden lookout tower are the major man-made features on the site. Most of the site is covered with wild grass which is used for grazing cattle; the remainder is cultivated for growing barley.



Source: UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

C. Physical Environment

1. Topography and Generalized Drainage*

The topography of the project site is characterized by moderate to steep rolling hills and narrow valleys. Topography is strongly controlled by resistant sandstone beds that are in many places exposed as outcrops and generally form the steeper hills on site. The hills which are composed predominantly of softer shale are normally gently sloping. The rolling topography is also characterized by intermittent stream channels incised into the hills and hummocky landslide areas.

A large number of natural divides characterize the site topography. The divides are in the form of ridge crests and saddle areas between the hill knobs. A major drainage divide traverses the site in an approximate east-west direction through the middle of Sections 15 and 16. Secondary drainage divides of lesser extent are located on the north and southeast of the major divide.

The general direction of surface water movement is toward the east along a major drainage basin at the southern and eastern section of the site. Surface runoff from secondary drainage basins leaves the site from at least four points at the site's north and west boundaries. Surface water drainage to the north and east from the site flows toward Bethany Reservoir and the San Joaquin Valley. Surface runoff exiting the site to the west flows under the South Bay Aqueduct-Dyer Canal toward Altamont Creek, just west of Dyer Road (refer to the Drainage Map, Page 20).

2. Geology

The Altamont Landfill site is underlain by marine sedimentary rocks of the Cretaceous Panoche formation. Rocks underlying the landfill site and adjacent areas are primarily shale with occasional thin, friable sandstone interbeds. Lenses of hard, resistant sandstone and pebble conglomerate also occur scattered throughout the Panoche formation and form most of the

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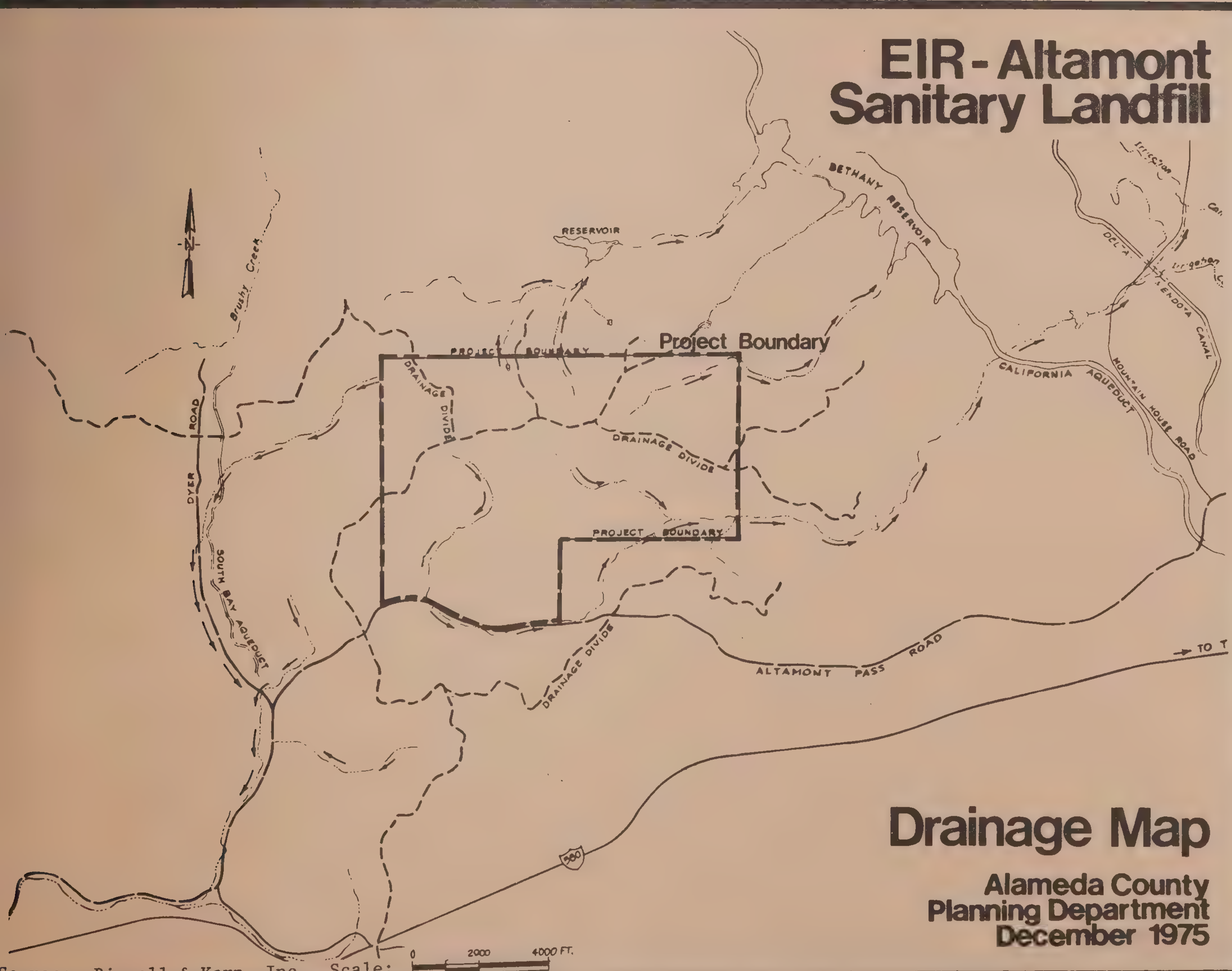
*A more detailed discussion of surface and groundwater characteristics on site is presented under the hydrology section of this report.



Source: Bissell & Karn, Inc. Scale:

outcrops in the study area. These resistant beds control much of the topography and may give a false impression as to the character of the rocks underlying the site. Hard sandstone and conglomerate beds are a distinctly subordinate constituent of the assemblage of strata underlying the landfill project area.

The Cretaceous Panoche formation and beds of the Tertiary Cierbo formation to the west and Neroly formation to the east have been folded into the Altamont anticline. The axis of the anticline passes through the southwest corner of the landfill property and trends in a northwest-southeast direction. The Panoche formation beneath most of the site strikes northwest and dips moderately to the northeast toward the San Joaquin Valley.

Except for outcrop areas, the Panoche formation is blanketed by clay soil or by Quaternary alluvial deposits. Soil depths do not appear to exceed five feet in hill areas but thicken considerably at the base of slopes and in ravines where the soil has accumulated as a result of downslope creep and slopewash.[2]

Quaternary alluvium is present in the main stream channels and to a lesser extent in minor ravines. The alluvium is composed predominantly of silty and sandy clay. Some very thin layers of coarse subrounded gravel are included in the alluvium in some of the main channels. Alluvial thicknesses vary from one foot or less in the upper reaches of drainage channels to more than 55 feet beneath the broad valley at the eastern margin of the site.[3]

Air photo interpretation by Nilsen[4,5] led to the delineation of numerous landslides within the study area. In the southern one-third of the property, landslides coincide chiefly with areas underlain by shale beds and coincide elsewhere on the property with east-facing dip slopes which are controlled by sandstone beds. The majority of the slides delineated by Nilsen are discernible in the field. However, the slides are subdued indicating that they are old and probably formed during the same geologic period.[6]

Examinations by Woodward-Clyde Consultants of trenches excavated into slides showed that the slides are of the earth-flow type and generally between 3 and 30 feet thick. The slides appear stable under present slope and climatic conditions but some could be reactivated during modifications of the existing terrain as a result of landfill operations.

3. Soils

The Altamont clay (AaD, AmE2) and the Pescadero clay (Pd) are the principal soil types present within the property.[7]

The Altamont clay occurs in upland areas and has formed as a result of weathering of the Panoche formation bedrock. In general, Altamont clay soils are well drained and slowly permeable. Runoff is medium and water absorbing and holding capabilities are moderate to high. Altamont clay soils can be used for dry farmed grain, hay, pasture and range and have a very high potential for forage production. Erosion potential varies from moderate to very high if vegetation is removed.[8]

The Pescadero clay occurs in valley areas and has formed by weathering of alluvial deposits. These soils are characteristically imperfectly drained saline-alkali materials. Permeability is very slow, runoff is slow and water-holding capability is low. Erosion potential is slight. The Pescadero clay can be cultivated with difficulty only within a narrow range of moisture content; fertility is low. This soil can be used for pasture.[9]

4. Seismicity

Studies by Woodward-Clyde Consultants concluded that the Altamont landfill site would be strongly shaken by an earthquake on the Calaveras Fault located 16 miles west of the area. However, effects upon the landfill would be inconsequential as demonstrated by the seismic response of the similarly designed Sunshine Canyon landfill in Southern California to the

devastating San Fernando earthquake of February 9, 1971. The effects of sloughing of soils on the downslope side of a fill cell, local compaction settlement of refuse and cracking along the junction of the landfill with native materials could be easily dealt with during routine site operation and maintenance.

Woodward-Clyde Consultants expressed the opinion that secondary seismic effects widely observed as a result of the San Fernando earthquake such as liquefaction and landsliding are not likely to occur at the Altamont site because of the absence of liquefiable fine sand deposits and because the levels of acceleration required for widespread landsliding are not anticipated at the site during a strong earthquake on the Calaveras Fault.

5. Hydrology

Woodward-Clyde Consultants conducted extensive investigations of groundwater and surface water conditions in the vicinity of the project site.

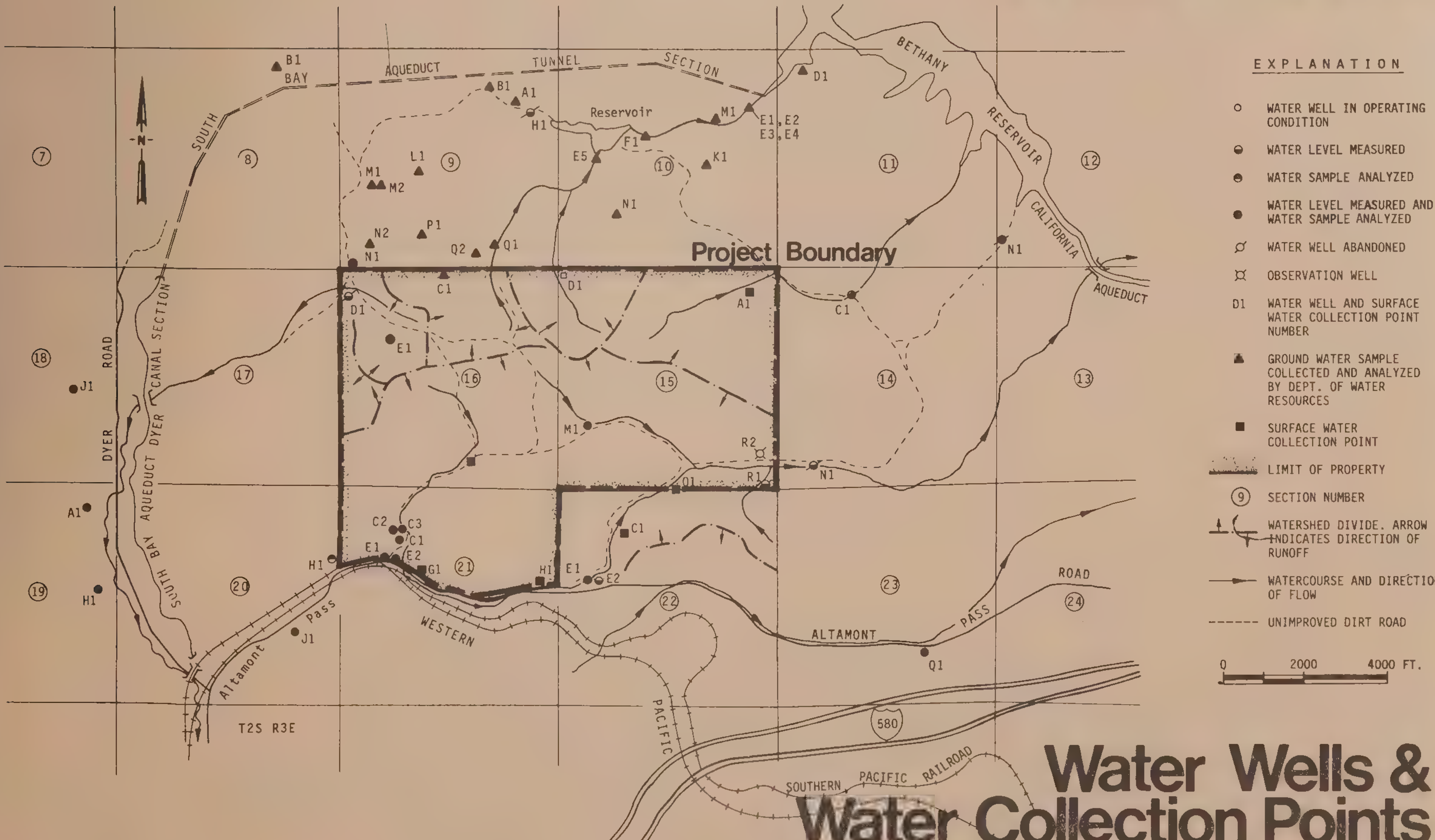
a. Groundwater

The study included a canvass of all water wells within the property and for a distance of over one mile in all directions from the site; construction of three observation wells, numerous exploratory borings, and constant head and pump-out tests to determine bedrock permeability.[10] Locations of observation and test wells are shown on the map entitled "Water Wells and Water Collection Points" on the following page.

The investigation determined groundwater levels throughout the property and assessed water quality movement and use.

Groundwater exists in all of the geologic units beneath the landfill site but none of these geologic units have sufficient permeability to yield large quantities of water to wells and are therefore not considered groundwater aquifers. The geologic units do supply water in sufficient quantities for stock watering and domestic wells.[11]

EIR - Altamont Sanitary Landfill

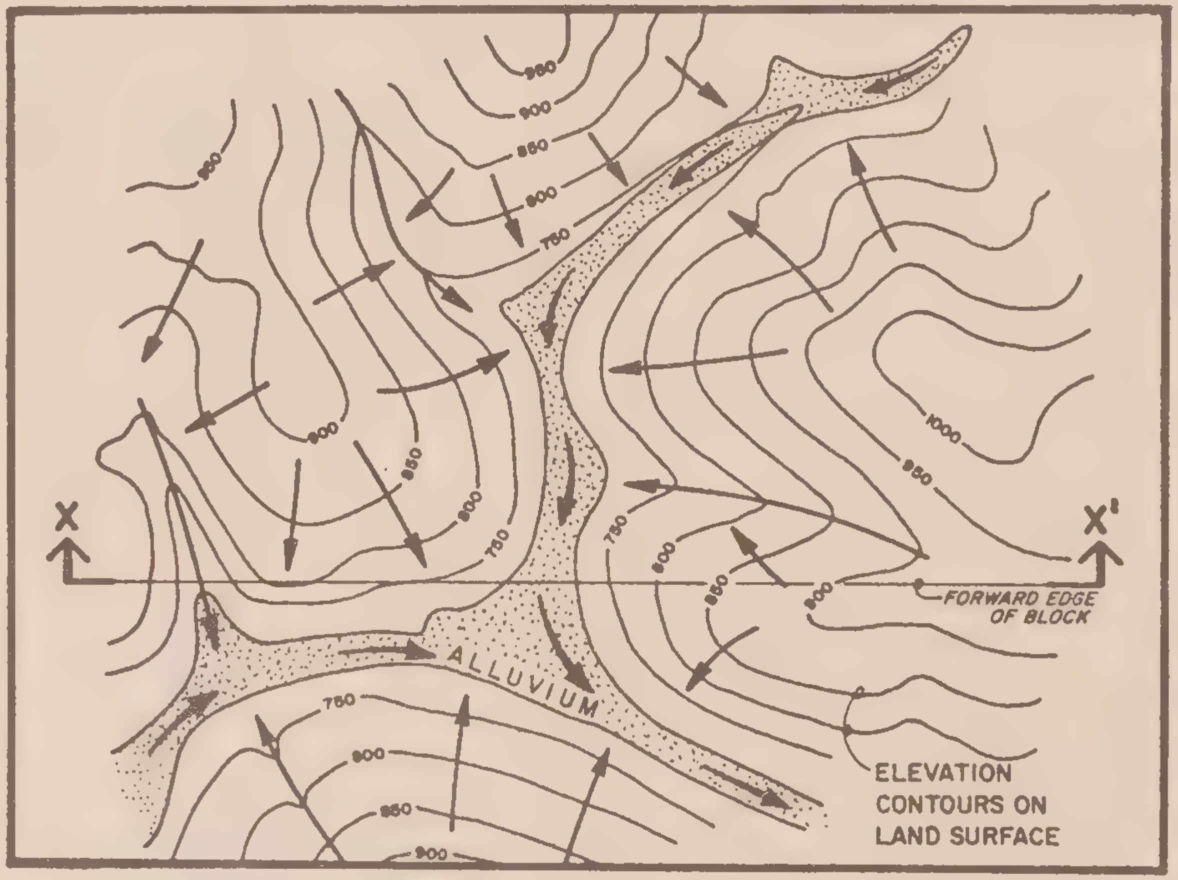


Water Wells & Water Collection Points

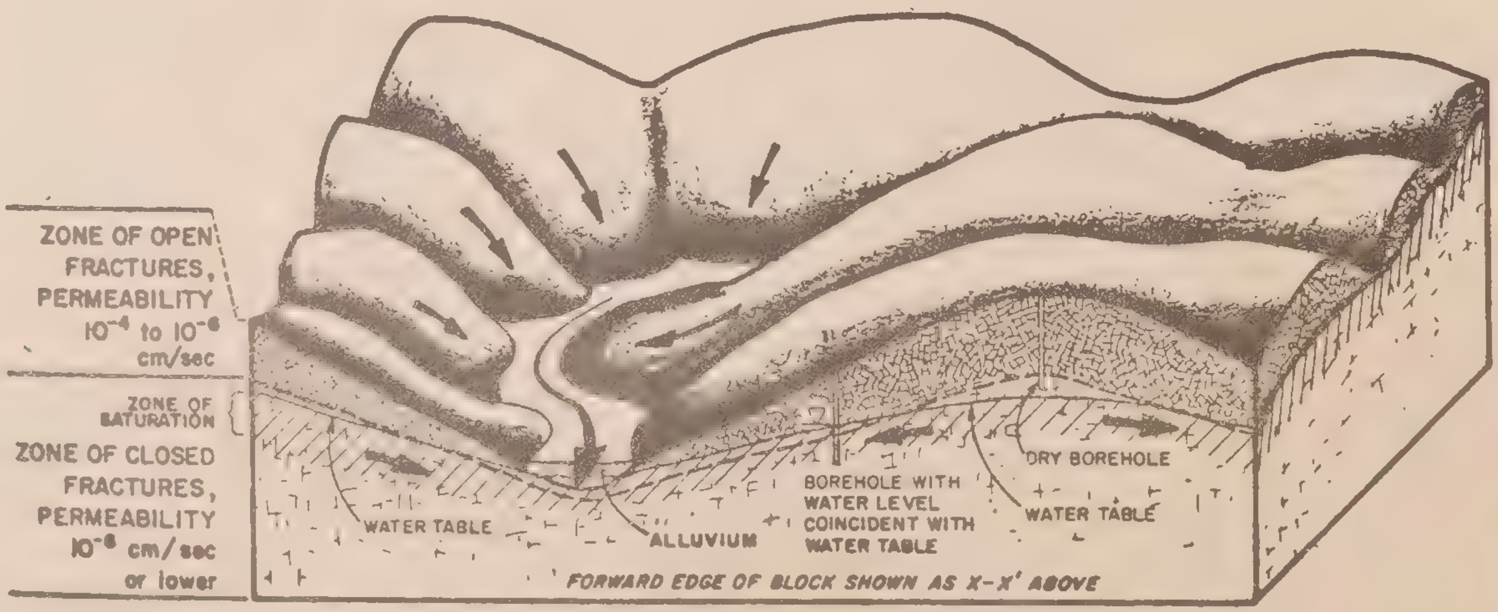
Alameda County
Planning Department
December 1975

Source: Woodward-Clyde Consultants

EIR - Altamont Sanitary Landfill



PLAN VIEW



OBLIQUE VIEW

Source: Woodward-Clyde Consultants

Groundwater Flow

Alameda County Planning Department
December 1975

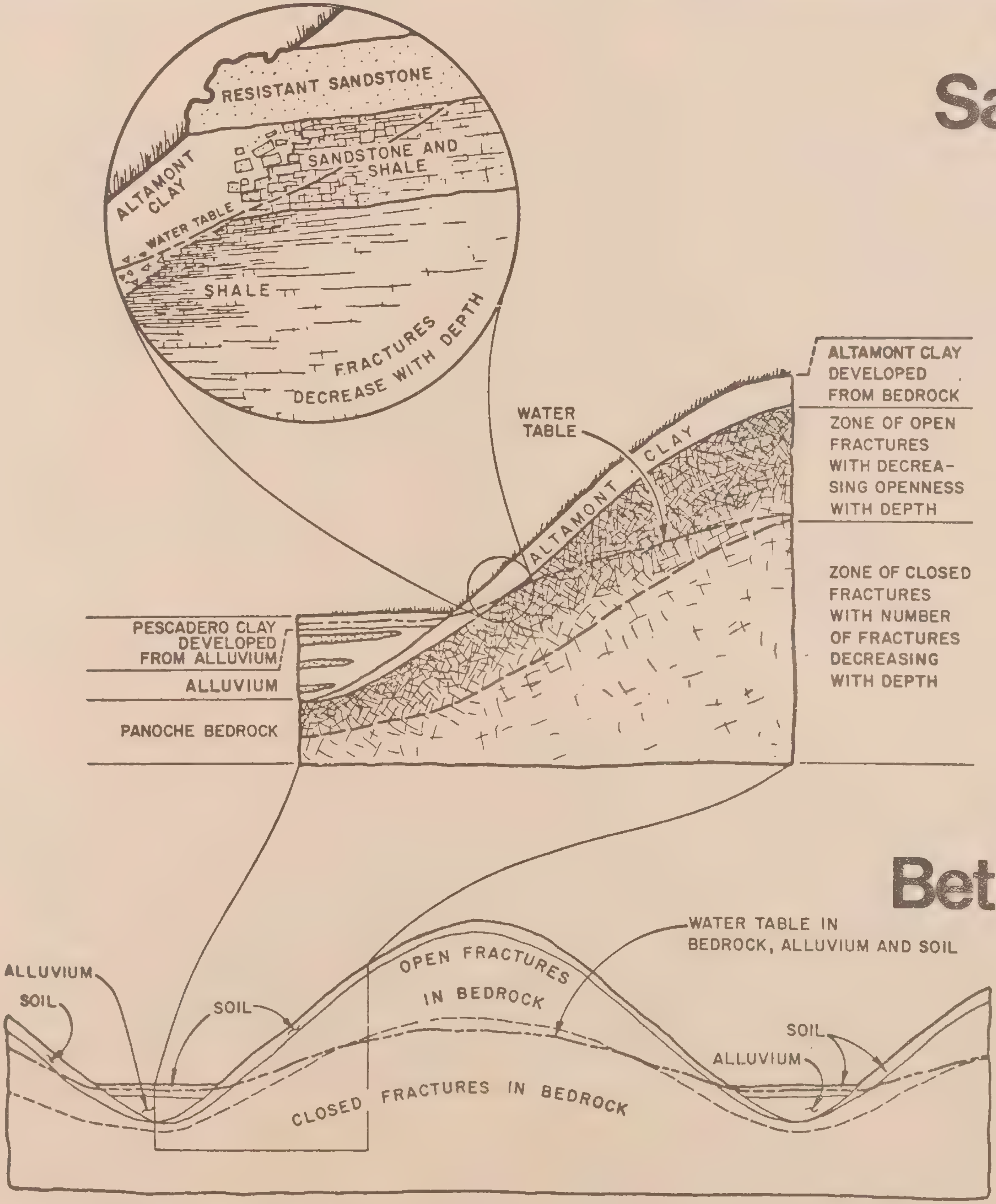
Most of the wells on the property are situated in stream valleys where alluvium is present. Logs of these wells show that they penetrate the alluvium and enter bedrock at depths of a few feet to as much as 43 feet (observation well 15R2). The group of wells near the ranch buildings in Section 21 draw their water primarily from alluvium as evidenced by high specific conductance and the high E-coliform content. A pump test well, 21C3, was located in this area by Woodward-Clyde Consultants (see Water Wells and Water Collection Points illustration for location). The well was sealed so that only yield from the Panoche shale could be determined. This was found to be approximately one-half gallon per minute with essentially no E-coliform and with a specific conductance of 3,200 micro ohms.[12]

The water table in the alluvium is within 2 to 18 feet of ground surface along the stream valleys and is near enough to the ground surface to be developed by excavated sump collection reservoirs that are common along the main stream valleys and ravines. The high water table in the alluvium is maintained by groundwater which moves from the Panoche formation in the surrounding hills into the alluvium. Ground and surface water movements are shown diagramatically on the Groundwater Flow illustration on the facing page.

The quantity of water in the alluvium is small because of the fine grained nature of the material and its low permeability as demonstrated by logs of test borings. Local lenses of cobbly sandstone gravel were detected during site exploration and these could provide zones of increased permeability within the alluvial deposits. Groundwater supplied to wells that penetrate the alluvium most likely comes from isolated silty sand lenses that are somewhat more permeable than the clay that comprises most of the alluvial deposits.[13]

Unfractured shale and sandstone that comprise the Panoche formation have very low permeabilities, on the order of 10^{-6} cm. per sec., based on field testing by Woodward-Clyde Consultants and the California Department of Water Resources.[14,15] Formations with such

EIR - Altamont Sanitary Landfill



Source: Woodward-Clyde Consultants

Relationships Between Fracture Systems & Groundwater Conditions

Alameda County
Planning Department
December 1975

low permeabilities are not considered aquifers but some groundwater is present in the system of open fractures near the ground surface. The fracture system and groundwater conditions are shown diagramatically on the illustration on the facing page.

The thickness of the zone of open fractures is on the order of 100 feet beneath the hilltops and only 5 to 10 feet beneath the stream valleys. Within the zone of open fractures, the fracture density and openness decreases gradually with depth until no open fractures remain and no permeability, exceeding rock permeability, is possible. Measured permeabilities in fractured Panoche formation rock varied from 1.6 to 2.9 x 10^{-5} cm/sec., e.g., a particle of water moving along a maximum hydraulic gradient would move approximately 16 to 29 feet in a year through fractured rock with these permeabilities.[16] In the opinion of Woodward-Clyde Consultants, maximum permeability in fractured rock within the landfill site is probably on the order of 10^{-4} cm. per sec. (100 feet in a year).

The many borings and test wells drilled on the property demonstrate that the water table is approximately coincident with the topography in a more subdued manner. This is again shown diagramatically on the facing page. Groundwater moves from hill areas toward the stream valleys on the site. Movement is primarily through the open fractures in the Panoche formation. When seeping water reaches the valley alluvium, it may flow downstream within the alluvium as underflow or be discharged by evaporation, plant transpiration or effluent seepage to support surface flow. Evidence for this movement is provided by damp soil, flowing surface water, flowing wells and green vegetation along the main stream valleys even at the end of the dry season.

The quality of groundwater at and within about one mile of the Altamont landfill site is shown in Appendices A, B, and C taken from Woodward-Clyde Consultants.[17] In general, the groundwater in the area is of fair quality and meets the 1962 U.S. Public Health Service Standards for drinking water in most respects. However, there are important exceptions as listed below.

Thirty-nine wells were sampled and analyzed for standard minerals. Of those, 20 exceed the recommended levels for chloride, 16 exceed the recommended levels for fluoride and 9 exceed the recommended levels for manganese. Three wells exceed recommended levels for sulfate and five exceed recommended nitrate levels. Water from all wells analyzed exceeds the water quality limit of 600 micromhos established by the California Department of Water Resources for exported water.

Locally high levels of E-coliform were noted in water from wells producing primarily from alluvial deposits.

Groundwater from 15 wells on the property was analyzed for heavy metals and organics as shown in Appendix B. Nine water samples were found to contain amounts of boron potentially injurious or unsatisfactory for crop production. Two samples were found to contain traces of hexachlorobenzene, a fungicide used in agriculture. No other hydrocarbons were detected.[18] Among the heavy metals recommended, cadmium levels were exceeded in 5 wells and lead levels were exceeded in two wells.

Well 22E1 was sampled and analyzed twice (see Water Wells and Water Collection Points on Page 24). The first analysis showed a high concentration of nitrate, 15.9 ppm. The second analysis showed that the nitrate concentration had increased nearly four times and that hardness, magnesium, bicarbonate, sodium and specific conductance had also increased. It is the opinion of Woodward-Clyde Consultants that other wells in and adjacent to the property should be sampled and analyzed several times to establish an adequate water quality baseline for the project. The limited data available indicates that significant changes in natural water quality may occur over short periods.

Of the 18 wells on the property or in the vicinity, only four are being used for domestic purposes; all of the other wells provide stock water.[19]

b. Surface Water

Surface water was observed on the property only in the main stream channel, from the Jackson ranch house in Section 21 downstream to the eastern edge of the property. The water is the result of effluent seepage of groundwater rather than rainfall runoff. Water standing in several stock ponds on the property is also primarily derived from groundwater seepage rather than rainfall runoff.[20] Use of surface water is limited to stock watering.

Surface water was sampled at six locations within the property and the results of chemical analysis are shown in Appendix D taken from Woodward-Clyde Consultants. Surface water quality closely parallels that of groundwater at the site. Two of the six surface water samples had chloride in excess of recommended limits, one exceeded recommended limits for iron, three had high manganese, four had boron over 2 ppm and one had cadmium in excess of recommended limits.

Again, ground and surface water flow from the project site is primarily toward the east. The northwest corner of the property drains west and then south along Dyer Road. Groundwater following this path will eventually reach the Livermore Valley by subflow through the Altamont Creek drainage system. Drainage from the northeast corner of the property moves toward Bethany Reservoir, a part of the California Aqueduct and South Bay Aqueduct Systems.

6. Biotic Conditions

a. Vegetation[21]

The natural vegetation on the site consists almost entirely of the annual grassland community typical of the foothills surrounding the Central Valley. In the western portion of the site (Section 16 and northerly half of 21, refer to Site Plan for locations of sections) extensive modification of this natural vegetation cover has occurred because of long-term tillage of all but the steepest slopes for the production of barley. In Section 15, heavy grazing by domestic livestock

has caused some disturbance of the annual grassland, especially around streamcourses, stock reservoirs, and springs where thistles and other weedy undesirable species have become common. The dominant plant species in all grassland areas appear to be common California representatives of the grass genera Avena, Bromus, and Festuca. There are no trees or shrubs except those that have been planted around various ranch buildings in the western part of the site. The following information is based on a field reconnaisance carried out by the consulting biologist on May 28, 1975.

The hills in the western portion of the project site (Sections 16 and N 1/2 21) are utilized primarily for the dry-land production of barley, which is harvested in May or June. Small areas that are too steep or rocky for cultivation support a plant association which includes several species of annual brome grasses and wild oats as dominants. A few clumps of foothill needlegrass, a native bunchgrass, may be found at these sites. Occasionally, forbs such as grass nut, California poppy, purple-owl's-clover, lupines, and common yarrow occur interspersed with the grasses.

Roadsides in this part of the property are occupied by a number of intruduced and weedy plant species. Annual ryegrass and wild oats are the most abundant, with soft chess and hare barley also quite common. Hedge mustard, thistles, bindweed, and common spikeweed are typical forbs in such disturbed places.

The only native shrubs observed on the site were a few clumps of western choke cherry on a north-facing slope undisturbed by farming in the southeast corner of Section 16. A number of form species were associated with the choke cherry, including San Joaquin locoweed, Brewer's pea, and lupines.

In the eastern portion of the project site (Section 15), three different plant associations can be distinguished. On the drier ridges and slopes the annual grassland is basically similar to the untilled parts of Section 16 described previously and is dominated

by wild oats, brome grasses and ryegrass. Native bunchgrass and wildflowers are not present, however, probably because of heavy grazing pressure. In their place are found introduced forbs including bur clover and red-stemmed filaree.

The second plant association is found in ravines where disturbance of the soil surface by concentrations of cattle has allowed heavy growths of bull thistle and Italian thistle to become established. In the alkali soil along the main creek in the Southeast 1/4 of Section 15, a third and distinctive plant association is present. The dominants here are saltgrass and Mexican rush, with prominent clumps of rabbitfoot-grass and Mediterranean barley.

There is no indication anywhere on the property of plant species or associations that are of unique value or concern. The most abundant plants are almost all introduced or weedy types which are common throughout California at lower elevations in farming and grazing country. Very few native wildflowers are present and those that are present are of the most widespread types. No unusual habitats such as vernal pools that might harbor rare or noteworthy native species could be detected.[22] A list of plant species identified by the consulting biologist during a field study of the site on May 28, 1975, is contained in Appendix E.

b. Wildlife

Field surveys of the subject site were conducted by the biological consultant on December 31, 1974, January 23, 1975, February 12, 1975, and May 28, 1975, for the purposes of identifying vertebrate animals and determining the quality of the local wildlife environment. They form the basis for the following information.

Amphibians do not appear to be particularly numerous or diverse on the site, probably because of the relatively low rainfall, lack of permanent streams, and habitat uniformity. Two species, the Western Toad and Pacific Treefrog, were found to be present and there is a good probability that populations of the Tiger Salamander occur. The

latter species is known to utilize stock tanks for breeding at nearby locations in eastern Alameda and adjoining counties.

Since most reptiles are dormant during the winter, none were seen on the site during the field studies in that season. During the spring field visit, Western Fence Lizards were seen as expected in rocky areas. Those lizards and snakes included in the species list in Appendix F, are mainly common forms known to occur widely in central California grassland habitat. A few, however, are species which show more restricted adaptations to arid or semi-arid environments and reach or approach the northern margin of their range in eastern Alameda County. These are the Side-blotched Lizard, Glossy Snake, Long-nosed Snake, and Western black-headed Snake. They are listed as possibly occurring at the site on the basis of published records or museum specimens from adjacent areas.

There appear to be no rare or endangered species of reptiles on site. The habitat characteristics of the project are not suitable for the Alameda Striped Racer, a rare snake which inhabits primarily brush and chaparral areas, or the Blunt-nosed Leopard Lizard, an endangered lizard inhabiting semi-desert wash areas found in the San Joaquin Valley.[23]

Approximately 28 species of birds were observed on the site during winter field visits and possibly others may be expected as migrants or summer visitors. Some are winter visitors that in this area are almost entirely restricted to the vicinity of ranch buildings and their associated trees and shrubs. This group includes the Robin, Dark-eyed Junco, and White-crowned sparrow. The largest assemblage of species is made up of those abundant and widespread forms that are resident in California grasslands and agricultural districts. Representative of this group are the Killdeer, Mourning Dove, Common Crow, Starling, House Sparrow, Western Meadowlark, Red-winged and Brewer's Blackbirds, and House Finch. The two most abundant breeding bird species on the open fields appear to be the Horned Lark and Western Meadowlark.

Perhaps the most noteworthy aspect of the bird fauna is the presence of a large variety of both resident and wintering raptor species. A total of eight species of predatory birds were seen during field visits, including two Rough-legged and Ferruginous Hawks that utilize the area as a winter feeding range. In December and January, large numbers of Rough-legged Hawks were observed hunting over the site and at least one Ferruginous Hawk was seen. On the February visit, both species were absent. American Kestrels (Sparrow Hawks) and Red-tailed Hawks were commonly encountered and although Marsh Hawks and White-tailed Kites are not so common, they were regularly observed. In January, two immature Golden Eagles were also seen. Because of the lack of trees, the only predatory species which nests on the site is the Burrowing Owl, which appears to be represented by a sparse population. Significantly, no raptorial bird species were seen during the spring site visit, emphasizing that the importance of the site is chiefly as a winter foraging area.

The mammalian fauna is characterized by large populations of burrowing rodents. The most numerous are the California Ground Squirrel, Botta's Pocket Gopher, and California Vole. The species inhabit all parts of the site, although in Sections 16 and 21 burrows are most heavily concentrated in the untilled steep or rocky "islands" of grassland. In this part of Alameda County, ground squirrel control by means of chemical agents (zinc phosphite, carbon bisulfite, or methyl bromide) applied by the landowner is recommended every other year by the State Department of Food and Agriculture. Although some poisoning is still carried out, rodent populations seem to be at a high level.

The rodents, of course, are the chief support of the varied raptor populations and of a number of mammalian predators as well. Control measures against predatory mammals have been discontinued in this area and there is evidence that Coyotes are numerous on the site. A few Gray Foxes are present and it is possible that the San Joaquin Kit Fox ranges into the eastern portion of the property at lower elevations. Because of the San Joaquin Kit Fox is currently listed as rare and endangered, special attention was given to the question of its status on the site. A report of the California Department of Fish

and Game (Craig D. Swick, Determination of San Joaquin Kit Fox Range in Contra Costa, Alameda, San Joaquin and Tulare Counties, 1973) lists several recent records for eastern Alameda County, including sightings, road-kills, and one active den. Kit Fox range is defined in this report to include the entire strip of hilly grassland east of the Altamont and Patterson Passes as the western margin of the agricultural lands in the adjoining parts of the San Joaquin Valley. Although this would include the proposed landfill site, actual records of occurrence were concentrated along the California Aqueduct and there is at present no solid evidence that Kit Foxes utilize the area under discussion here.

A species list of vertebrate animals occuring on site is contained in Appendix F.

7. Climatic and Atmospheric Conditions

The climate at the site is typical of eastern Alameda County. Temperatures are moderate in the winter and high in the summer months. Rainfall occurs primarily during the winter with little or no rain during the hot summer period.

The mean maximum temperature for July, generally the hottest month of the year, is about 90 degrees Fahrenheit at the site. During the same month, the average temperature is above 70 degrees. Maximum temperatures of 90 degrees or higher occur as many as 65 days per year. The mean minimum temperature occurs during the winter month of January and is about 37 degrees. The average temperature for January is approximately 48 degrees.

Rainfall at the site averages approximately 12-inches per year, and most rain falls between November and April. The peak monthly rainfall is about 3-inches. During the remaining months, very little precipitation occurs at the site.[24]

Passes in the Mt. Diablo Range at elevations between about 500 and 1,200 feet often experience high velocity late afternoon winds, as the marine air gushes into the interior; this is undoubtedly the case at Altamont. Although there are no observations there, the normal maximum afternoon wind is probably 5-10 mph stronger than at Livermore and on occasion may reach 30-35 mph.

During the winter months (November to March), the daily wind cycle is not nearly as regular as in summer. When storms are approaching, the winds are typically from the southeast at 10-15 mph or more, and as the storms pass, winds turn from north to northwest. There are about 63 days per year with rain in San Leandro, most of which (54) fall in the November-to-April rainy season; since these rains are produced by passing storms, the wind direction during this season is almost equally likely to be from the southeast as from the north. Although the average wind speed is least in winter, the strongest peak speeds occur then (during the passage of storms).

The atmospheric circulation and climate described above play very important roles in air pollution since they determine the rate at which contaminants are dispersed and the rate of photochemical reactions in the atmosphere. Temperature inversions (an increase of air temperature with increased height above the ground), which restrict the depth of mixing of air, are common in this area throughout the year. During much of the dry season, the inversion is typically located at 1,000-1,200 feet above sea level; the daily seabreeze below the inversion is usually intense enough between May and August to disperse pollutants injected near the ground. However, in the fall and winter (between storm periods), the inversion forms near the ground because of cooling during the long nights and winds are weak, leading to poor dispersion. The inversion is actually lowest during the night and morning in the fall and winter. These fall and winter ground inversions are particularly severe over the inland valley, where cool air tends to stagnate.

In this area, the high pollution months for carbon monoxide (CO), oxides of nitrogen (NO_x), and hydrocarbons (HC) are October to February while the highs for oxidants occur between June and October. The difference in behavior between oxidants and the other contaminants is due to the fact that oxidants are formed from the reation of NO_x, HC and atmospheric oxygen under the action of sunlight, which is most intense during the summer. Concentrations of the other contaminants are highest when the dispersive power of the atmosphere is least. This occurs in winter, when the mean wind speed is weakest and mixing in the verticle direction is least due to the frequent occurrence of temperature inversion near the surface, particularly in the early morning. The mean variation of carbon monoxide throughout the day illustrates these effects rather clearly: The peak CO concentration occurs in the winter half of the year at about 8 a.m. and between 6 and 10 p.m.; these times coincide with the peak traffic and the minimum capability of the atmosphere to disperse contaminants. Oxidants, on the other hand, reach their peak concentration near midday in summer and early fall, when the sunlight is most intense.

The most serious problem is that of oxidants. Although there are no observations at Altamont, there is little doubt that the oxidant levels are at least as high as they are at Livermore. Livermore also has a fairly-high level of particulates, especially during the summer months.[25]

D. Cultural Environment

1. Present Land Use

The site is currently used for agricultural purposes. The western portion is used for grain production (dryland barley) while the eastern part (Section 15) is devoted to livestock grazing. Two groups of ranch buildings stand on the site. The Jackson ranch residence is located near the site entrance at Altamont Pass Road. Farrell's ranch is located near the northwest corner of the property. Both ranch houses have associated barns and sheds. An abandoned wooden lookout tower is located on the highest point of the property. Earth dams have been constructed across the main streamcourses in several locations to provide water for livestock. Most of the ponds contain water year-round.

2. Public Facilities and Services

Telephone and electricity services are available to the site.

Police protection for the site is provided by the Alameda County Sheriff's Department from its Santa Rita Station. A barbed wire fence now encloses the property.

Fire protection is available from the Alameda County Fire Patrol in Livermore; however, the California State Division of Forestry also provides fire protection under mutual aid agreement.

Water for existing dwellings on site is currently provided by private wells. Sewage disposal is by private septic tank and leach field.

3. Traffic and Circulation

The effects of the landfill operation on traffic and circulation facilities are principally related to the trips of long haul transfer trucks from the transfer station to the project site and trips of private individual dumpers directly to the site. The San Leandro Transfer Station is not a part of the subject Conditional Use Permit application and is not directly considered in this EIR. For the purpose of this study, it is assumed that the transfer station will be located at the San Leandro site, but the analysis of traffic and circulation impacts could, with the exception of those along Davis Street, apply to other potential transfer station locations in the East Bay.

The circulation facilities and traffic operations appurtenant to the proposed landfill operation are those forming the 33 mile (one-way) route that will be used by transfer trucks to reach the project site. These are Davis Street from the transfer station to State Route 17 (Nimitz Freeway), SR 17 southerly to SR 238 (Castro Valley cut-off), SR 238 easterly to Interstate 580, I-580 easterly to Greenville Road and Greenville Road to Altamont Pass Road, as shown on the Transfer Truck Haul Route Map on page 18.

In describing the conditions and operations of these facilities, the traffic consultant utilized the conventional measure of "Level of Service" which relates quantity of traffic flow to quality of flow.

As defined in the Highway Capacity Manual,[26] the service level of a given facility is a theoretical traffic volume determined by the physical and operational characteristics of the facility and by stipulated conditions of traffic flow. Conditions vary from unrestricted flow described as Level A to extreme congestion at Level F. In urban street networks, the critical areas typically occur at major intersections. For these areas, Level of Service C is used by traffic engineers as the standard for design criteria; at this level, traffic flow is stable, with intermittent but unobjectionable delays during peak hours. At Service Level D, traffic flow becomes more restricted and delays to vehicles may be substantial for short peaks; however, periodic clearing of waiting vehicles prevents excessive backups from developing. Service Level E represents capacity, with sustained delays and backups.

The most critical intersection on the local street system will be at Davis Street and Doolittle Drive. All truck traffic must pass through this intersection. Flow through the intersection is currently affected by the relatively large numbers of trucks, both to the existing landfill at the end of Davis Street and to other industrial uses in the general vicinity. Calculations and observations by the consulting traffic engineer indicate that the intersection is operating at C Level of Service during peak periods.[27]

On the two-lane section of Davis Street west of Doolittle Drive, traffic volumes are low and movement is free. On the four lane section east of Doolittle Drive, movement is also relatively free. There is another signalized intersection at Warden Avenue just west of SR 17; however, cross traffic from this street is much lighter than that on Doolittle Drive, and delay is minimal. The only significant delay on this portion

of Davis Street is introduced by the Southern Pacific Railroad grade crossing. Studies made by the City of San Leandro show that there are an estimated average of 101 train crossings per day, that the average blockage of Davis Street by a train crossing was 1.95 minutes, and the total average daily delay was 3 hours and 17 minutes. Assuming 50 percent of the crossings take place between 6:00 a.m. and 6:00 p.m., there are an average of over 4 crossings an hour during the time of operation of the project (7:00 a.m.-5:00 p.m.). That delays in this range have a detrimental effect on traffic is evidenced by the diversion of a portion of traffic to alternate routes.[28]

The interchange of Davis Street and State Route 17 is functionally a full cloverleaf which eliminates the conflicts of left turns to or from the ramps. However, there are no auxiliary lanes provided at right turns from the ramps on to Davis Street and exiting traffic must yield to through traffic, thus causing possible backup on the ramps during peak hours. Also, the turning radii of some ramps are fairly tight, resulting in reduced speeds on the ramps themselves.

State Route 17 is an 8 lane freeway (4 lanes in each direction) from Davis Street southerly to State Route 238, with traffic volumes at 125,000 vehicles per day at the junction. Traffic flow on SR 17 is at Service Level C during off-peak hours, decreasing to Service Level D during the a.m. peak and Service Level E during the p.m. peak, with traffic at the last period being stop and go. For freeways, the service level is expressed in terms of volume, speed, and stability of flow. To oversimplify, at Service Level C, average speeds are at or above 50 miles per hour, at Service Level D, speeds are at or above 40 miles per hour, and Service Level E, speeds are below 40 miles per hour. Stability of flow and freedom to maneuver decrease significantly from Level C to Level E. During the hours of peak transfer truck activity, traffic flow on SR 17 is at Level C.[29]

State Route 238 is a four lane freeway connecting SR 17 with I-580. Flow conditions on SR 238 are generally at Service Level C throughout the day with a few points of local congestion during commuter peaks. The same is true for Interstate Route 580, with the exception of the four lane section between Castro Valley and Dublin.

There is an extended moderate up-grade for eastbound traffic out of Castro Valley and a shorter but more severe one for westbound traffic out of Dublin. On the latter grade, trucks are restricted to the right lane only to avoid blockage of both lanes by slow moving vehicles. Both grades tend to slow down truck traffic, with a resultant impact on general traffic flow. The Service Level on this portion of the highway is in the C-D range during peak hours. On the eight lane section of Interstate Route 580 between Dublin and Greenville Road, the Service Level is at C or better throughout the day.

Greenville Road is a 2-lane facility with a 21 foot roadway section and improved shoulders. Altamont Pass Road is a 22-24 foot wide roadway with unimproved shoulders of varying width. Altamont Pass Road rises steadily but moderately in grade from Greenville Road to the project site. The horizontal alignment is curvilinear resulting in several lengthy no-passing zones. While the combination of physical and operational limitations would normally result in a low level of service, the actual traffic volumes are low enough (280 vehicles per day) to maintain free flow conditions.

There are pending or proposed improvements to several elements of the transfer truck route described above.

Doolittle Drive (State Route 61) between Davis Street and Airport Drive is in the State Highway system. The California Department of Transportation (CalTrans) proposes to widen this street to a 4-lane section (it is presently 2 lanes) plus median turn lane. This will improve traffic flow on the street and increase the overall capacity of the Davis Street intersection.

Davis Street, east of Doolittle Drive, is also a State Highway (SR-12). An overcrossing of the Southern Pacific Railroad on Davis Street is being designed by CalTrans and is proposed for construction in 1976-1977.

A project is currently underway to widen to 8 lanes the existing 4 lane section of I-580 between its junction with SR 238 and Dublin. Of the 4 lanes in each direction, one will be reserved for multiple passenger vehicles such as buses and possibly car pools, and one lane will be graded and not paved, leaving 2 lanes to serve general traffic. The net result would be a reduction in trips on the 2 general traffic lanes in proportion to the increase in trips on the multiple passenger vehicle lane. An additional truck climbing lane will be built westbound from Dublin to the summit of the pass improving operations in this direction.

The first stage of the widening project will be from Eden Canyon Road to the existing 8 lane section in Dublin, estimated for completion in 1979. A subsequent stage will complete the project westerly to the SR 238 junction and will revise the existing freeway to freeway interchange. This stage is tentatively estimated for completion in 1983.

Under the general direction of Alameda County and with participation by CalTrans and affected cities, a study is being made of a north-south corridor serving the industrial area generally bounded by East 14th Street and Hesperian Boulevard on the east, the Bay on the west, and extending from Hegenberger Road in Oakland to Jackson Street in Hayward. The object of this study is to evaluate alternative plans for a transportation facility serving industrial uses which would supplement or replace existing routes.

Preliminary recommendations are for expansion to a six lane facility along the existing Doolittle Drive alignment from Davis Street southerly to Williams Street. From this point, it would be constructed on a new alignment in the general area between the Southern Pacific tracks and the Bay south to Jackson Street. The plan is subject to review by the County and the cities the route traverses. This project, along with those listed above for Doolittle Drive and Davis Street, would increase the capacity of the intersection of these two streets.

4. Aesthetics

a. Existing Scenic and Visual Qualities

The site appears to the casual observer as barren, rolling hills gradually decreasing in elevation from west to east. Closer inspection reveals the presence of human use, including fences, domesticated cattle, dirt roads and off-road tire tracks, artificial ponds, ridges on slopes caused by the tracks of grazing animals, and assorted structures.

The moderate-to-steep hills of the site form part of the Altamont Hills, which separate the Livermore Valley from the San Joaquin Valley and constitute the last signficant topographic variation for eastward travellers until the foothills of the Sierras. Conversely, these hills represent the first visually noticable topographic relief for those travelling west from the Central Velley. The Altamont Hills and the Diablo Hills, of which they form a part, are visible from large areas in the San Joaquin Valley and the southern Delta Region, as well as the Livermore Valley and the crests and eastern slopes of the hills on the western side of the Livermore-Amador Valley.

The project site, while in these hills, is generally not visible from the west; it is hidden by ridges closer to the Livermore Valley. Large portions of the site, however, are visible from the San Joaquin Valley and the southern Delta. The higher portions of the site are visible from the California Aqueduct Bicycle Staging Area at Bethany Reservoir. It is generally not visible from Interstate 580 (which is included in the State Master Plan for Scenic Highways*, 1970), which passes to the south, due to intervening highlands. Fairly extensive views into the western half of the site are available from Altamont Pass Road (a County Scenic Route);

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*Coordination among Alameda County, affected cities, and the State is continuing toward official State Scenic Route Designation.

views of the eastern portion are limited to higher elevations because of intervening ridges. Visually and psychologically, then, the site is a portion of the western boundary of the Central Valley, helps divide two very distinct regions of California, and is visible from a wide area.

The site is almost entirely covered with annual grasses, which are brown for most of the year and turn green during winter when sufficient rain falls. Most people seem to regard the short period of green as aesthetically pleasing. Opinions on the brown period vary widely, with descriptions ranging from "golden" to "parched."

The site and surrounding area are scenic to the extent that its topography and openness are pleasing. As a possible attraction for a park or trail system of some sort, the area suffers in comparison to other already developed areas closer to urban centers, such as Del Valle State Recreation Area, Mount Diablo State Park, and the many regional parks in Alameda and Contra Costa Counties. The lack of trees and significant water limits the park potential and aesthetic value of the site.

The Livermore Area Recreation and Park District Master Plan, as amended in 1974, has determined the Brushy Peak Creek area approximately 2.4 miles westerly of the project site to be an aesthetically significant resource and designated it a potential recreation area. In addition, the plan proposes trails along Altamont Pass Road, Laughlin Road (to the Brushy Peak area), Dyer Road and also along the South Bay Aqueduct from Dyer Road to Bethany Reservoir. No trails are shown traversing the site. Brushy Peak also designates a proposed park and recreation area of County-wide scale and significance by the Alameda County Park and Recreation Element adopted June 12, 1956, and amended November 21, 1968.

b. Noise

Noise levels in the vicinity of the site are relatively low, characteristic of other rural areas of the County. The principal sources of noise in this vicinity are related to the periodic operation of farming equipment, intermittent traffic along Altamong Road, use of railroad lines, and secondarily, from traffic along I-580 freeway.

5. Archaeological and Historical Features

An archaeological reconnaissance of the site has been undertaken and its results are summarized later in this section. A brief history of the area, taken from the archaeological report prepared for the project and Wood's History of Alameda County,[30] are presented first in order to place the archaeological findings and existing conditions in proper perspective.

Historic accounts by the first Spanish explorers in the region indicate that the general vegetation cover looked then much as it looks now--grass-covered hills with very few, if any, trees. Many of the native grasses and shrubs that were exploited by the native population of this area have been crowded out by recently introducted European grasses. Soaproot, however, used as a native food, was still in abundance within the study area. This plant had many uses--its fibers were used in basketry; its sap as a fish poison; and its bulb, when leached and roasted, as a food. Ethnographic evidence indicates that soaproot was harvested as a food source in the spring or early summer. While the overall context suggested that the nearby floor of the San Joaquin Valley might have been more suitable for permanent occupation by prehistoric inhabitants, it is possible that the study area could have had its major use by the local people during the spring and early summer.

Little is known concerning the prehistoric population in this general area because, being among the first people contacted by Europeans, they were the first to be destroyed. It is known ethnographically that the study area was situated between a Costanoan group called the Seunenes who inhabited the Livermore Valley, and two San Joaquin Valley groups. One of the latter groups was called the Leuchas, possibly of Yokuts stock, who inhabited the region on the west bank of the San Joaquin River around Tracy. The second group was called the Bolbones, also of Yokuts stock, who occupied the sloughs of the lower San Joaquin River west of Stockton and whose main village was located two miles east of Bethany Reservoir.

Since the study area is closer to and more easily accessible from the San Joaquin Valley than from the Livermore Valley, it is reasonable to infer that it was utilized by one of the San Joaquin Valley groups. Lending credence to this inference is the "Cuevas Affair" of January 1805, which occurred in the hills to the northeast of Livermore. Following an attack on a Spanish missionary expedition by the Leuchas, a punitive expedition was sent out that found a group of 35 Leuchas at a temporary camp some ten to twelve miles northeast of Livermore.[31] No mention was made by either Father Cuevas or Sergeant Peralta, the leader of the punitive expedition, of any permanent village in this area.

The distance of ten to twelve miles northeast of Livermore would be somewhere on the west side of the hills between the San Joaquin and Livermore Valleys. This region, which includes the present study area, was, according to contemporary reports, controlled by the Leuchas, if the Cuevas evidence can be accepted as indicating this. Cook[32] reported, however, that "this entire stretch is devoid of any indication of substantial aboriginal occupancy, either in eighteenth century documents or in moder archaeological research." It seems reasonable to infer that the Leuchas visited this region only to set up temporary camp sites in order to harvest wild foods or to hunt.

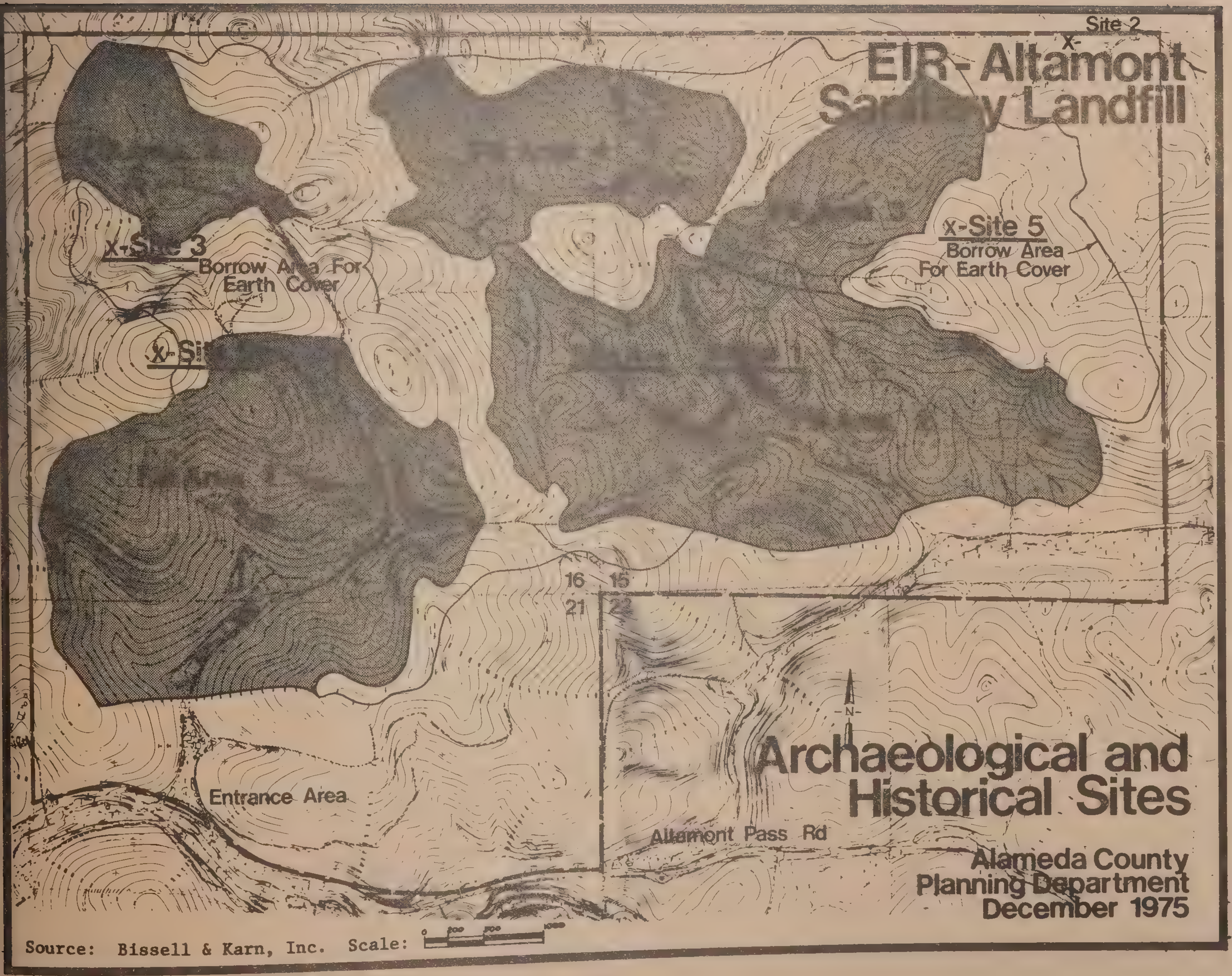
By the early 1800's, all Indians between the San Joaquin River and the San Francisco Bay had been forcibly removed to the Spanish Missions such as San Jose and Santa Clara, where they were employed as a captive labor force. Due to the economic and social upheaval brought about by the missionary effort, and the lack of Indian resistance to European diseases, the Indian population declined drastically. By 1832, when the missions were secularized and the christianized Indians released, there were too few members of any one tribe left to begin anew a viable tribal way of life. Consequently, some Indians joined the remnants of other tribes on the east bank of the San Joaquin River, while others settled in small bands in the backwaters of their former territories. DeNier[33] reported that after 1830 a group of "Scalanes" and "Golgones" (Bolbones?)

had a rancheria at Los Positas Springs east of the present town of Livermore. Robert Livermore wished to build a house nearby but was prevented by the Indians. Some years later Robert Livermore, Jr., built a large house on the site of the former rancheria. It is also possible that some secularized Indians may have lived in the sandstone caves on Dyer Road located about one mile to the west of the study area, a place where one of the long-time modern residents of the study area once found an old stone cross about two inches in length.

In more recent times, the site and surrounding area were included in the Canada de los Vaqueros Mexican grant (most of which lies in Contra Costa County) in 1836 to Miranda Higuera and Francisco Alviso. The grant comprised 13,320 acres. This rancho was purchased by Robert Livermore in 1846. The discovery of gold in the Sierra Foothills brought a great influx of people who came by sea to San Francisco and thence to the gold fields. Altamont Pass became a major route from the City to the gold country. Various services were provided for these travelers in the Altamont Pass area, especially at Mountain House.

In 1853, Murray Township was created with Robert Livermore appointed Supervisor. (The area had been ceded to the United States by Mexico in 1848). Activity in the vicinity at the time consisted mostly of heavy grazing. The hamlet of Altamont was on the line of the Central Pacific (now Southern Pacific) Railroad. By the late 1860's it boasted a hotel and some settlers. The school house was erected in 1870. At this time, sheep raising was the primary local employment and land use. Currently, almost all of Sections 16 and 21 are, and have been since the present lessee and former property owner can recall, cultivated. Any aboriginal or any temporary camp sites in these areas would have been badly damaged or destroyed. Section 15 is now used as grazing land for cattle; some of its flatter areas had been plowed prior to 1900.

The archaeological investigation revealed six sites of potential archaeological or historical interest. The sites are shown on the map entitled Archaeological and Historical Sites on Page 48.


Site 2
EIR - Altamont Sanitary Landfill
x-Site 3
Borrow Area For Earth Cover
x-Site 5
Borrow Area For Earth Cover
16
15
21
22
N
Archaeological and Historical Sites
Entrance Area
Altamont Pass Rd
Alameda County Planning Department December 1975
Source: Bissell & Karn, Inc. Scale:

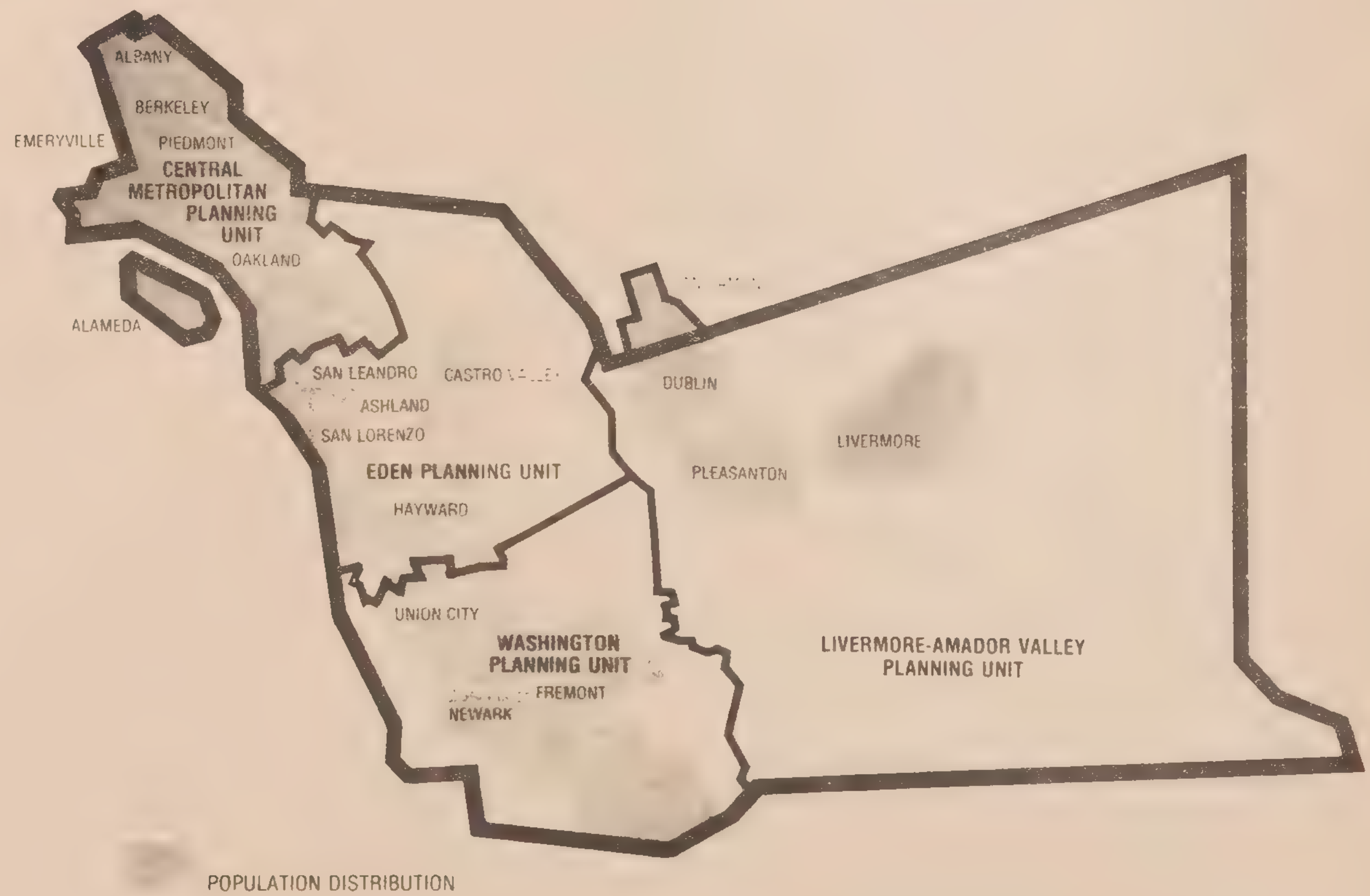
Site 1 consists of six bedrock mortar depressions in the shape of a flattened oval. The depressions were generally each 13 cm. in diameter with a 9 cm. deep cup-like hole that had been ground perfectly smooth, presumably by seed-grinding activity. No artifacts or other archaeological materials were found in the vicinity.

Site 2 is a stone foundation, probably for a ranch building. The foundation, or low wall, consists of a single layer of closely set, unmortared sandstone rocks, aligned so as to form two rows at approximate right angles and a third row which is less clearly defined. The present lessee, a life-long resident of the area, reported he had no knowledge of what structure might have been situated at this location. Excavation revealed several shards of bottle glass and some small mammal bones, probably sheep, some 15 cm. below the surface. The bottle glass was of a type made not less than 60 years ago. The original structure may have been either an animal shelter or a sheep herders temporary living site.

Site 3 is a circular depression which investigation revealed was most likely a fairly recent garbage pit.

Sites 4 and 5 were similar rock-walled structures, the former being rectangular measuring about 2.5 square meters with walls averaging 75 cm., the latter measuring about 2.5 by 1.8 meters with walls averaging 40 cm. in height. No historic or prehistoric material was found in the immediate vicinity. The structures may have been built and functioned as aboriginal hunting blinds. The placement of both on hilltops afforded excellent visibility in several directions. In addition, both blinds overlooked low saddles across which game could have been driven toward hunters hidden in the blinds. It is equally possible that the structures may have been built by sheep herders who had been in the area up to about 40 years ago, functioning as windbreaks while affording excellent visibility.

EIR - Altamont Sanitary Landfill



Planning Units

Alameda County
Planning Department
December 1975

Source: Larry Westdal

Site 6 is a small, rundown cabin dating to the World War II period, according to the lessees. It is located at the highest point of the property, elevation 1,257 feet. According to local information, the cabin was used as an aircraft lookout station during World War II.

6. Solid Waste Disposal Within Alameda County

At the present time, approximately 1.1 million tons of municipal/industrial waste are generated in Alameda County annually. In recent years, the daily per capita solid waste generation rate has been increasing on the average of 1 percent per year. Source reduction presents hope for decreasing these generation rates. The following table illustrates present waste generation and future projections based on the 1 percent per capita per year increase by Alameda County Planning Unit. Planning Units are illustrated on the facing page.

ESTIMATED ANNUAL TONNAGE SOLID WASTE GENERATED FOR COLLECTION

ALAMEDA COUNTY (BY PLANNING UNIT)

PLANNING UNIT	1973[1]	1975[1]	1980[1]	1990[1]	2000[2]
Central Metropolitan	530,000	544,000	579,000	649,000	726,000
Eden	259,000	265,000	290,000	337,000	391,000
Washington	166,000	177,000	202,000	228,000	390,000
Livermore-Amador	91,000	97,000	118,000	170,000	232,000
County Total	1,048,000	1,083,000	1.189,000	1,445,000	1,738,000
Generation Rate Lbs/capita/day[1]	5.0	5.10	5.36	5.92	6.52[2]

1. Alameda County Planning Staff and Alternatives Subcommittee of the Alameda County Solid Waste Management Plan Technical Advisory Committee. Solid Waste Management Alternatives for Alameda County. Draft. November 1974. p. 56. Based on Alameda County "B" series population projections Figures rounded.

2. Oakland Scavenger Company.

The solid waste generation projections include the portion of San Ramon that receives service from the Oakland Scavenger Company.

STATUS OF SOLID WASTE DISPOSAL SITES IN ALAMEDA COUNTY

CLOSING DATE	SITE AND PLANNING UNIT	OWNER/OPERATOR	TYPE OF WASTE	ANNUAL 1973 TONNAGE
Closed	Hayward Disposal Site (E) (West Winton Avenue)	Oakland Scavenger Company	Group 2	145,000
Closed	Alameda Naval Air Station Disposal Site (CM)	Military	Group 2/3	40,000
Closed	Albany Landfill (CM)	City/Albany Landfill Corp.	Group 3	30,000
1976	Marina Disposal Site (E)	San Leandro/Turk Island Co.	Group 3	40,000
1976	Pleasanton Public Dump (L-A)	Pleasanton Garbage Service, Inc.	Group 2	20,000
1977	Alameda City Disposal Site (CM)	City/Alameda City Disposal Co.	Group 2/3	70,000
1977	Davis Street Disposal Site (E)	Oakland Scavenger Company	Group 2	380,000
1980	Berkeley Landfill (CM)	City/Berkeley Landfill Company	Group 2	120,000
1982	Turk Island Disposal Site (W)	Turk Island Co.	Group 2/3 (except garbage)	15,000
1995	Eastern Alameda County Disposal Site (Vasco Road) (L-A)	Ralph Properties, Inc./ De Paoli Equipment, Inc.	Group 2	50,000
2000	Fremont Disposal Site (Durham Road) (W)	Oakland Scavenger Company/ East Bay Disposal Co.	Group 2	110,000

PLANNING UNITS

(CM) Central Metropolitan (E) Eden (W) Washington (L-A) Livermore Amador Valley

Status of existing solid waste disposal sites in Alameda County is illustrated in the table on the facing page.

In 1970, 11 landfills were accepting solid waste for disposal. Today only eight of these sites are in operation. By 1980, all but three of these sites will be closed. Of the landfills that are closing, the seven that are located in the Central Metropolitan and Eden Planning Units where 75 percent of the County's solid waste is produced will be filled by 1980.

The Hayward site (Winton Avenue) closed in November, 1974, and the Alameda Naval Air Station disposal site also closed that year. Most recently, in March, 1975, the Albany landfill was required to cease operations under Court order as a result of a suit intitiated by the State Lands Commission. With the closing of these sites more than 265,000 tons of solid waste a year are being diverted to other fills. A portion of the waste originally intended for Albany's site is being sent to the Berkeley landfill. Waste planned for disposal in the Hayward site is now hauled to the Davis Street site, which is also receiving the waste from the Alameda Naval Air Station.

By 1977, four more sites are scheduled to close--the Pleasanton landfill (within 6 months), the City of Alameda disposal site, and both the Marina and Davis Street disposal sites in San Leandro.

According to the Pleasanton Planning Department, an agreement has been reached between the Pleasanton Garbage Company and Ralph Properties (operator of the East Alameda County Disposal Sites) to haul the 20,000 tons of Pleasanton refuse from the approved transfer station in Pleasanton to the Eastern Alameda County Disposal site at Vasco Road.

In 1980, the Berkeley landfill is scheduled to close. As a result of accepting waste originally designated for the Albany fill, the site may be completed before that time, possibly during 1978. Berkeley is planning to construct its own transfer station and to undertake a future disposal solution for its solid waste. If plans are delayed or abandoned, an additional 120,000 tons of solid waste would require disposal facilities temporarily or on a long-term basis.

Subsequently, in the early 1980's, the Turk Island site in Union City is slated for completion. This site now accepts 15,000 tons of waste annually.

The two remaining sites--the Fremont (Durham Road) and the Eastern Alameda County disposal sites are expected to have available capacity until approximately the year 2000. The Fremont site is limited by use permit to receiving only waste which originates within the City Limits of Fremont, Newark, and Union City. While the Eastern Alameda County disposal site has capacity until the year 2000 at its present rate of fill, the addition of wastes from other sites as they close will reduce its life proportionately.[34]

IV. Legal, Policy and Institutional Constraints

A. Zoning

The properties under consideration for the sanitary landfill site are currently zoned A (Agricultural). This zoning was placed on the properties by the 61st Zoning Unit in 1955, which was the original zoning for the unincorporated area of Murray Township. Under the terms of the Zoning Ordinance, the A District is

> ...established to promote implementation of General Plan land use proposals for agricultural and other non-urban uses, to conserve and protect existing agricultural uses, and to provide space for and encourage such uses in places where more intensive development is not desirable or necessary for the general welfare. (Section 8-25.0)

Originally the proposed use was not allowed in this district. However, in 1970, the Zoning Ordinance was amended to make "Sanitary Landfill not to include processing salvaged material" a conditional use in the A District.

Thus while no change in zoning is required, a Conditional Use Permit must be obtained for the project. Conditional uses are uses which

> ...possess characteristics which require special review and appraisal in each instance, in order to determine whether or not the use (1) is required by the public need, (2) whether the use will be properly related to other land uses and transportation and service facilities in the vicinity, (3) whether or not the use if permitted will, under all the circumstances and conditions of the particular case, materially affect adversely the health or safety of persons residing or working in the vicinity, or be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood, and (4) whether or not the use will be contrary to the specific intent clauses or performance standards established for the District in which it is to be located. (Section 8-94.0)

The County Zoning Administrator must make a determination that the proposed landfill would meet these requirements, and set out findings to that effect. The Zoning Administrator may modify the proposal or attach conditions as part of an approval action. Action of the Zoning Administrator is appealable to the Board of Supervisors within 10 days.[35]

B. County General Plan

The Alameda County General Plan designates the site and all nearby areas "Unclutivated and Undeveloped"[36] recognizing grazing and dry farming uses appropriate for the area. The Open Space Element of the General Plan designates the site and its surrounding area as Uncultivated Agricultural Open Space. This is a primary type of open space proposed for permanent retention.[37] The Scenic Route Element designates Altamont Pass Road and 580 Freeway as scenic routes. Scenic qualities and natural scenic areas adjacent to, and visible from, scenic routes are to be preserved and enhanced.[38]

C. Agricultural Preserves

The properties involved in this project are in Agricultural Preserves and under contract with the County under the terms of the Williamson Act.[39] This act allows a property owner to voluntarily restrict the uses of his property; in return the property is assessed under an income capitalization method rather than the usual comparable sales method for property tax purposes. This generally results in a lower assessed value and thus lower taxes--often significantly so. The loss to the County in tax revenues is partially subvened by the State. However, this subvention represents only about one quarter of the actual loss in revenues.

Under the terms of the Williamson Act, the lands under contract must be limited to agricultural and "compatible" uses.[40] This specifically includes recreational and open space uses. The Alameda County Board of Supervisors has drawn up an exclusive list of specific compatible uses which is attached to and incorporated in each contract. This list must be approved by the State Director of Agriculture. The list has varied since the inception of the program as uses have been added which previously had not been considered. However, they are generally agriculture-related or recreational uses. Although a landfill is a Conditional Use in the Agricultural District, it is not on the list of permitted uses for preserves.[41] Thus a policy decision will have to be made whether to allow it as a use in these preserves.

D. Alameda County Health and Safety Code

In addition to the Conditional Use Permit, refuse disposal in Alameda County is regulated under the Alameda County Health and Safety Code. The Alameda County Health Officer is responsible for administration and enforcement of the code. Application by the operator and issuance of a license and permit by the Health Officer are required prior to operation of the disposal site. The code is intended to insure that refuse disposal is performed in such a manner "as to discourage the harboring and breeding of rodents and insects, as not to objectionably and unreasonably pollute the air, as not to constitute a fire hazard, and as not to result in such unsightliness of the premises as to result in depreciation of value of adjacent property." The code sets standards for operation of the disposal as a "sanitary landfill," for prevention of nuisances, fire hazards, rodents and insects, and for provision of toilet facilities.[42]

E. Solid Waste Management Plan for Alameda County

Under the State Solid Waste Management and Resource Recovery Act of 1972,[43] Alameda County is required to prepare a solid waste management plan for all waste generated in the County. The plan is subject to approval by a majority of cities containing a majority of population within the incorporated area. Local government is given primary responsibility for solid waste management planning. The deadline under the act for documentation of city approval and submittal of the final draft plan to the State Solid Waste Management Board by January 1, 1976, will not be met.

Hearings and public review are continuing on the plan. Based upon an initial 90 day review period of the Preliminary draft of the plan, revisions were made and released for review on December 8, 1975. Review will end on January 6, 1976 (30 days) at which time cities are requested to respond to the plan revisions by approving or disapproving with reasons. The County Planning Commission will then forward the plan to the Board of Supervisors. In the absence of the approval of the plan by more than 50% of the cities with more than 50% of the population, the State Solid Waste Management Board will act to mediate the differences or establish a new planning procedure. After approval of a plan by the State Board, local solid waste management and planning is to conform to the plan. New facilities must be reviewed by "the agency of the county responsible for development of the county solid waste management plan" for conformance with the proposed plan.[44]

Following are the major points pertinent to the project contained in the policy recommendations of the draft plan:

1. A joint exercise of powers agreement is to be executed for county wide coordination of waste management between cities, special districts and the county, including the formation of a joint powers board of elected officials; in the absence of a joint exercise of powers agreement, coordination would occur by an interim council of representatives from interested parties.

2. Enforcement and regulatory functions are to be assigned the County Health Care Services Agency with a coordinator and activities separate from the joint powers agency.

3. Waste collection and disposal activities may be performed by private industry.

4. Collection services and franchising are the responsibilities of local jurisdictions.

5. Capital intensive programs for material and energy recovery may be publically or privately funded at some future time based upon evaluation and decision of the Joint Powers Agency.

6. At least 67% of County solid wastes are to be recovered for energy or resources by 1980 and 92% by 1990 (Alternatives 1980C and 1990C); the option of composting should continue to be explored.

7. A litter law and bottle bill should be applied on a county-wide and state-wide basis.

8. Uniform audit procedures and model agreements are to be adopted for evaluation of revenues and changes in waste collection and disposal operations. The joint powers agency should participate in regional solid waste management through the Association of Bay Area Governments. Solid waste management plan should be reviewed on a 3-year cycle.

9. Major changes in the waste management system (collection, resource or energy recovery, or disposal, for example) must be in accord with this plan and should be thoroughly evaluated as to cost, efficiency, technical feasibility, social costs and benefits by the appropriate jurisdiction and County Waste Management Agency and publically discussed so that the public is assurred the choice of the best way to solve the waste problem without its options either for public or private ventures in future plans being foreclosed.

Policies relating specifically to landfill operations contained in the draft plan are:

1. All regional and local standards, as well as minimum State standards, for county landfills should be reviewed to require that disposal sites resolve operational problems and achieve "sanitary landfill" status. Standards based upon the statewide standards should be revised and adopted for local applications.

2. Regulation of land disposal operations should be performed consistently and comprehensively throughout Alameda County. A single county agency should be assigned overall authority and responsibility for a monitoring program to prevent all forms of environmental pollution. Federal, state, and local standards and regulations must be vigorously enforced.

3. The proliferation of land disposal sites and increase in land for sites should be discouraged. A minimum number of sites should be chosen with adequate capacity for the needs of the county and located away from urban areas. Centralization would facilitate operational control and opportunities for resource recovery. Gravel quarries within the Livermore-Amador Valley groundwater basin are not suitable for use as disposal sites.

4. Reasonable public access to the transfer stations and disposal sites should be provided.

5. Contingency plans will be developed to insure land disposal capacity in the event of labor disputes and natural disasters.

6. Producers of solid waste should bear a substantial portion of the costs of disposal according to the quantities each generates and the hazardous/non-hazardous or hard-to-handle nature of the waste.

7. While lack of operational standards might result in lower development and operating expenses, the resulting environmental pollution would be borne by society as social costs.

8. Disposal of waste to land involves real and incommensurable costs. Users of the site pay the real costs and society pays for the incommensurables such as restrictive use, aesthetic, and pollution impacts. In reviewing new or existing sites, the distribution of all costs as well as benefits must be made equitably over time. Every effort should be made to reveal and quantify both real and social costs for all aspects of waste management.

9. Land is a valuable natural resource. Any lands designated in the Solid Waste Plan and in the General Plan as being suitable for a disposal site must be subjected to a critical review before approval as a site.

10. Burial of recoverable waste materials is presently more economical but not the most desirable solution to the waste disposal problem. The "out-of-sight, out-of-mind" philosophy of waste disposal is invalid in a of finite resources.

11. Resource recovery systems (focusing on materials recovery and/or energy recovery) could have a very significant impact on the reduction of solid wastes going to landfills and would conserve valuable resources and energy.

12. All solid waste disposal sites should be protected against encroachment of incompatible land uses and should be reclaimed for future use in accord with the General Plan.[45]

F. State Solid Waste Management Board Policies

The policies of the State Solid Waste Board are codified into four basic principles which deal with the operational aspects of waste management and resource management concepts to guide the development of local plans.[46] The policy states:

1. Solid waste management programs shall be planned to provide for adequate, sanitary, safe and environmentally sound solid waste storage, collection, processing, disposal facilities and services to meet the residential, institutional, commercial, industrial, and agricultural needs of the State of California.

2. Solid waste management programs shall be implemented so as to be consistent with approved local solid waste management plans and to be in compliance with all applicable minimum state standards.

3. Reduction of waste generation shall be promoted to enhance the conservation of energy, natural resources, and land resources.

4. Recovery of materials and energy from the solid waste stream shall be encouraged for the conservation of energy, land, and other natural resources.

G. State Water Resources Control Board (SWRCB) and California Regional Water Quality Control Board (CRWQB) - Central Valley and San Francisco Bay Regions

The agency charged with protecting the water resources of the State of California is the State Water Resources Control Board. Regional Water Quality Control Boards provide the local implementation of the State's water quality programs and policies as set forth by the State Board and the Porter-Cologne Water Quality Control Act.

In 1972, the SWRCB adopted new provisions to the California Administrative Code (Subchapter 15 as an addition to Chapter 3 in Title 23) which govern waste disposal to land and establish a disposal site and waste disposal classification on a statewide basis. The classification of disposal sites is based upon the geologic and hydrologic features of the disposal area and the capability for protection of surface and groundwater quality. The categorization of wastes is based upon the threat that the type of waste material presents to water quality.[47]

Prior to disposal of waste at a new site or when a material change in the waste discharge is planned, the operator is required to file a report of waste discharge with the appropriate regional board* to receive site classification, reclassification, and/or waste discharge requirements.[48] Such waste discharge reports must include sufficient information to enable evaluation of the disposal operation in relation to conditions in the disposal area. Specifically, this report must include a description of waste materials, areas to be used for disposal, a general plan of site operations and sequence of filling operations, and detailed site information. Such site information includes geological and hydrological data for the disposal area, locations and depths of excavations of soil borrow and waste disposal areas, information concerning control measures proposed for drainage, leachate, and gases, and description of anticipated land use after termination of disposal operations.[49]

In addition to these requirements, the report must include certification that all local agencies with jurisdiction have approved the use of the site for the intended purposes.[50]

In its processing of the waste discharge report, the Regional Board(s) will evaluate the project site's suitability as a Class II-I disposal site based on criteria outlined in the table entitled Classification of Waste Disposal Sites on Page 7, prior to site classification and issuance of waste discharge requirements.

H. Bay Area Air Pollution Control District (BAAPCD)

The BAAPCD is primarily responsible for policing non-vehicular sources of air pollution (industry and burning) within the Bay Area. Its most important indirect control on air pollution is exercised through the District's permit requirements, set out in Division 13 or Regulation Two. Regulation Two directly controls particulate matter, sulfur compounds, lead, nitrogen oxides, odorous

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*Because the project site falls within the jurisdictions of both the Central Valley and San Francisco Bay Regions, it is not clear whether one (logically the Central Valley Region because most of the project site drains to the San Joaquin Valley) or both of the Regional Boards will issue waste discharge requirements on the project.

substances from industrial and commercial sources and several types of emissions from incinerator operations. The permit provisions require anyone wishing to build and operate a source that emits air contaminants, such as the proposed project, to first apply to the BAAPCD for a permit and submit plans and specifications for evaluation by District engineers.[51]

I. Other Agencies

Many additional federal, state and local agencies are involved in solid waste management. Following is a description of functions of several of the more significant agencies.

The Federal Environmental Protection Agency through its Office of Solid Waste Management provides statewide coordination, technical assistance and demonstration grants.

The State Department of Public Health, Vector Control Division, develops minimum standards for solid waste handling and disposal to protect the public from vector-borne diseases, other health hazards and nuisances.

ABAG provides a policy framework for regional planning and review of applications from local jurisdictions for federal funding. ABAG has assumed a coordination role in solid waste management planning along with the SSWMB Staff for issues of regional interest such as Group I waste disposal and marketing of secondary materials. ABAG also is active in the demonstration program for the Bay Delta composting system.

V. Identification of Environmental Impacts and Mitigation Measures

A. Physical Impacts

1. Geology, Soils and Hydrology

Potential impacts on the physical environment which may result from development of a sanitary landfill at the Altamont site include contamination of ground and surface waters by leachate from refuse, dust blowing from barren surfaces of refuse cells and stripped areas and scarring of the landscape and reactivation of landslides during operations.

Impacts upon ground and surface waters are potentially most significant. Site hydrologic characteristics were, therefore, assessed in detail during the geotechnical study of the site by Woodward-Clyde Consultants.

The consultants' study provided initial data concerning water movement and quality on the site and in the near vicinity. As noted by the consultants, additional water quality data is needed to establish a data baseline which includes seasonal fluctuations in natural water quality. Such data should be collected and the results provided to interested parties. It would also be valuable to plot the water quality data so that existing spatial variations in significant constituents can be identified.

Woodward-Clyde Consultants established one observation well near the eastern boundary of the landfill site to permit continued monitoring of groundwater quality along the main drainage leaving the property. Monitoring points to observe ground and surface water quality also appear necessary on the drainage to Bethany Reservoir in the northeast corner of the site, in the drainage to Dyer Road and Altamont Creek in the northwest corner of the project area and on the crest of the "dry divide" along Altamont Pass Road in the southwest corner of the project area. Alluvial deposits extend across the flat divide at this location and when combined with possible seepage paths through fractured rock along the crest of the Altamont anticline, could permit groundwater subflow westward across the drainage divide into the headwaters of Altamont Creek.

Woodward-Clyde Consultants made recommendations to affect as much isolation of refuse cells from the environment as possible. Recommended features, described in detail in the consultants' report, include a system of subdrains to permit groundwater seeping from nearby hills and upstream portions of valleys to bypass the cells and a compacted earth fill key to be placed at the downstream toe of the refuse cell.

Review of the recommendations by Woodward-Clyde Consultants indicates that if construction of fill cells is in accordance with the recommendations, isolation will in general be accomplished. However, since the ultimate

height of some fill cells may be as much as 500 feet above the valley floors, cell margins will locally encounter fractured bedrock giving rise to the opportunity for uncontrolled groundwater seepage into portions of the refuse cell, generation of leachate, and escape of contaminants through other portions of the fracture system. Also, experience with fracture permeability in sedimentary rocks of similar type and age as the Panoche formation, has demonstrated that permeable pathways persist in sandstone and conglomerate beds to greater depths than in shale.[52]

It should be anticipated that some surface water will infiltrate through the compacted earth covers proposed over complete fill cells. Root tubes, animal burrows and capillary effects are means by which this may occur. Some leachate will be generated as a result.

In addition to leachate, carbon dioxide and methane gas are potentially adverse and hazardous by-products generated by sanitary landfills. Carbon dioxide generated in the waste would degrade water quality by increased corrosively, discoloration, odor, and hardening of water. Methane gas, which is also a normal by-product of the decomposition in sanitary landfills, is flammable and potentially hazardous if allowed to concentrate and build-up.

Mitigation:

a. Operation of the project with close review and supervision by consulting engineers and engineering geologists could prevent many potential impacts.

b. Provision of a more comprehensive water quality monitoring program particularly in the drainages to Bethany Reservoir and Livermore Valley would help to identify as early as possible, if ground or surface water is being contaminated.

c. Project sponsor should specify measures that will be undertaken if the on-going monitoring program reveals that contaminants are escaping from the refuse cells. Methods for securing compliance with these measures could be included in conditions for approval of the project.

d. Before a refuse cell is contructed and in order to reduce the possibility of escape of contaminants through the walls of the refuse cells, accurate profiles of permeability across enclosing hills could be obtained through exploration and testing. Where cells rise above the elevation of permeable bedrock fracture systems, a compacted earth blanket could be placed on the hillside up to the maximum height of the fill cell. Details of blanket design and placement should be determined by geological and soils engineering consultants.

e. In order to minimize the potential for seepage of leachate around the ends or beneath earthfill buttresses , such buttresses could be placed on unfractured shale and their abutments could be in shale. If buttresses must be located in areas underlain by sandstone, fractures could be blanketed with compacted, impervious fill or grout.

f. Woodward-Clyde Consultants made recommendations for dust control during landfill operations. These recommendations included development of on-site groundwater supplies to the maximum feasible extent. Since such development could affect downstream goundwater users, the amount of groundwater available could be identified and water rights determined before any dust control plan involving groundwater extraction is developed.

g. Measures for mitigating scarring of the landscape during operations, erosion control, work adjacent to landslides, and restoration of cell surfaces to productive use were presented by Woodward-Clyde Consultants. Principal in these recommendations is the spreading of topsoil and revegetation of cover over refuse cells when cell-filling is completed. If done properly, this revegetation program could be effective in mitigating impacts associated with erosion, siltation, dust and the loss of habitat for various organisms. However, the program as proposed by the sponsor, may not be as effective as it should be. A more detailed discussion of these problems is contained in the biological impact section of this report.

h. The potential effects of both carbon dioxide and methane could be substantially mitigated through the proper use of gas vents and lined barriers.

2. Biology

The proposed landfill operation will have its most significant impact on the biotic environment through habitat destruction resulting from topographic modifications. Over a period of years, several of the larger valleys on the site will be filled by the deposition of large volumes of solid waste and the side-slopes and hill-tops will be used to provide cover for this material as it is brought in. The entire procedure, however, will involve about 100 or less acres at any one time. As each area is filled and the waste compacted and covered, it will be returned to its original use: either dryland grain production or livestock grazing. Thus, although the existing plant and animal life will be completely eliminated from a given area while the operation is in progress, this will be a temporary alteration impacting only a small portion of the total site at a time.[53]

In evaluating the effects of this proposed action, the present status of the biota must be considered. The site has been profoundly disturbed by human activities for a long period of time. Even in those parts of the property which have not been subject to tillage, the native perennial bunchgrasses were long ago replaced by introduced annual grass species. In many places on the site, intense grazing, trampling by livestock, and soil disturbance by farm machinery have created good conditions for the growth of undesirable weeds, many of them (like the annual grasses) introduced to California inadvertently from other parts of the world. Among the animals, the dominant species are also those adaptable forms that thrive in an altered or disturbed environment, such as the ground squirrels. The uniformity of ecological conditions over the site is correlated with a general lack of diversity in vegetation and wildlife. There appear to be no unusual or noteworthy habitat areas that deserve special consideration.[54]

Animal populations will reestablish themselves quickly by emigration from adjoining habitat. There should be no significant diminution in the total rodent populations on the site; on the contrary, the disturbed land surface at each fill location will very likely support high concentrations of ground squirrels and other small mammals. Because of the fact that ground squirrel populations are important reservoirs of bubonic plague (Pasteurella pestis) in California, it may even be necessary to carry out rodent control programs at fill locations. Thus, no measureable reduction in the food supply for predatory birds and mammals is expected. This is particularly important because of the numbers and variety of raptorial birds that utilize the site.

No significant impact on wildlife is expected from the noise and disturbance of the landfill operation or increased vehicular travel due to transfer truck trips in the area. There has been activity by men and machines on site and in the vicinity for many years in connection with ranching farmers operations, the existence of a major interstate highway a short distance to the south and the previous use (before the interstate) of Altamont Pass Road as a main truck route. The effect of disturbance on hawks and eagles would appear to be of greatest concern, yet they were observed to hunt in a normal manner near ranch buildings and in the vicinity of heavily-traveled roads and highways.

A potentially significant problem exists for reclamation of the filled areas for pasture and grazing land, because of the proposed method of operation. As a part of the landfill operations, the filled areas are proposed to be capped with 2 feet of earth material excavated from hill-tops and sideslopes. This material will, for the most part, be a mixture of inert clay subsoil, and broken shale with minor components of topsoil. It will be of low fertility and not conducive to rapid growth of quality annuals good for grazing purposes. With natural reseeding, the areas can be expected to generate stands of low quality weeds such as thistles, bindweed, and common spikeweed. Human-aided reseeding of more desirable

varieties of annuals would be helpful but probably not totally effective because of the conditions of the soil. Should the finally dressed areas not sustain a substantial growth of soil binding plants, an array of impacts could result, including erosion (both water and wind generated), siltation, and ultimately stability problems, such as slumping associated with the filled areas.

A potentially serious impact on vegetation in local areas of the site could develop as a result of the deposition of wind-blown dust on the foliage. Because of the combination of earthmoving operations, high winds, and generally dry conditions, this could become a problem on the downwind side of active fill locations.

There are apparently no significant groundwater resources on the property. However, in areas where groundwater may exist, it is possible for a sanitary landfill to create adverse impacts on water quality through contamination of groundwater by leachate, methane, carbon dioxide, and through degradation of surface water runoff by silt and increased turbidity. If leachate-contaminated groundwater emerges to the surface at natural springs or is pumped from wells into stock troughs or tanks, it could adversely affect both domestic and natural plant and animal life.

Because of the intermittent nature of streamflow, no aquatic plant and animal communities exist on the site that would suffer harmful impacts from erosion and siltation should it occur. Some of the runoff from the north 1/2 of Section 15 and the northeast 1/4 of Section 16 eventually reaches the Bethany Reservoir on the California Aqueduct, which is used for recreational fishing and shelters migratory waterfowl. If careful control is not exercised over fill operations carried out in the ravines of this part of the property, the plant and animal life (primarily aquatic) which inhabit or utilize this body of water could be adversely affected by degraded water quality, siltation and dust.

Mitigation:

1. The potential impacts associated with the problems of restoring plant cover in the filled areas could be mitigated in a number of ways. As recommended by the geotechnical consultant, topsoil stripped from scarified areas (both fill and borrow areas) could be stockpiled for future use as cover material. If placed over the compacted inert shale and subsoil cell cover to a depth of about 18 inches, this would provide a fertile and desirable medium in which renewed plant life could get a start. Erosion and siltation problems could result from stockpiling of this or any material but interim planting of thse materials should be effective in controlling such problems. In addition to the placement of topsoil for cover, or any other cover material for that matter, an intensive reseeding program utilizing several grass seed mixtures and any of a number of sowing techniques (hydro-mulch, mechanical and of course shallow working of the soil for preparation) would be quite helpful in the reclamation of filled areas. Such a program would be best implemented with the advice and assistance of the Soil Conservation Service. If the infertile shale and subsoil material is used for cover material, as is proposed, then remedial measures such as soil conditions and amendments would be necessary and could be applied and worked into the soil prior to or as a part of final placement of cover so as to give the seeds a more hospitable and nutritious medium for germination and growth.

2. The problems associated with the deposition of wind-blown dust on foliage could be substantially mitigated through proper management and operating procedures including frequent watering and early reseeding of denuded areas.

3. If leachate generation does become a problem, pumping for stock-watering should be suspended and troughs drained. Also contaminated natural springs should be fenced off or covered.

4. While careful control should be exercised over any of the fill areas, those operations carried out in areas which drain to Bethany Reservoir and the Livermore Valley should be particularly cautious. Use of erosion and siltation controls and perimeter- and sub-drains could be effective in preventing silt, wind blown dust or even leachate from reaching and impacting the plants and animals therein.

The reviewing biologist concludes that the negative impacts on the biotic environment of this sanitary landfill operation would be minimal. If careful control and proper management of the operation is maintained, filled areas should come to support a plant cover and wildlife habitat very much like the present one in species composition and general appearance.

3. Climatic and Atmospheric Impacts

The project will have no appreciable effect on general climatic conditions of the site area, since the processes which determine climate are of such broad extent and scale compared to the project's size.

The air quality implications of the project evaluated by the consulting meteorologist focussed on the two most significant aspects of the project which might adversely affect air quality: traffic generated pollution and particulate generation.

The increments of carbon monoxide, oxides of nitrogen, and hydrocarbon concentrations added downwind from the principal highways used by the project were computed for the normal peak traffic hour (7-8 a.m.) and the normal daily average traffic. Since the poorest dispersion (dilution) is likely to occur in the early mornings of the fall and winter, extreme meteorological conditions (poor mixing) were assumed to occur during peak traffic hours; such conditions occur about 30% of the time during the mornings of the October to February period and less than 5% of the time during the remainder of the year. For the normal daily average traffic, typical meteorological conditions (dispersion parameters) were assumed, so as to yield typical concentrations throughout the year.

Computed Pollutant Concentrations (PPM) Due to Project-Generated Traffic Along Route 17

Distance downwind from Route 17	Daily traffic (average meteorological conditions)			Peak-hour traffic (severe conditions, fall/winter)		
	CO	NO_x	HC	CO	NO_x	HC
100 ft.	0.03 (4.4)*	0.01 (0.33)	0.01 (0.33)	0.03 (48.)	0.03 (4.0)	0.03 (4.0)
200 ft.	0.02 (3.0)	0.01 (0.16)	0.01 (0.16)	0.2 (32.)	0.01 (2.5)	0.02 (2.5)
300 ft.	0.01 (1.6)	0.01 (0.10)	0.01 (0.10)	0.1 (20.)	0.01 (1.4)	0.01 (1.4)
400 ft.	0.01 (0.9)	0.01 (0.06)	0.01 (0.06)	0.06 (12.)	0.01 (0.8)	0.01 (0.8)

*( ) = Background levels due to other traffic.

Source: Albert Miller, Consulting Meteorologist, September, 1975.

The increments of carbon monoxide, oxides of nitrogen, and hydrocarbon concentrations due to the traffic generated by the project will be undetectable, as illustrated by the computed values along Highway 17 presented in the table entitled Computed Pollutant Concentrations (ppm) Due to Project Generated Traffic Along Route 17 on the facing page. Under no circumstances will the increment be greater than 1% of the existing levels along the freeways. The emissions from vehicles along the roads near the project site will produce small increments in the pollution levels and will not exceed those levels shown in the previous table. The project generated traffic will not increase the incidence of above-standard levels of air pollution in the area.[55]

The particulate emissions from the project site derive from two sources: soil that is disturbed and the refuse being dumped.

Emissions of dust into the atmosphere result whenever the earth's surface is disturbed by digging, scraping, and other earth moving activities. Wind exerts a stress on the surface that causes the dust particles to become airborne. Estimates made at quarries indicate that about 0.02 pounds of dust becomes airborne for each tone of quarried material. Assuming that 1,500 tons of soil will be moved to cover wastes each day, the dust emission should be about 30 pounds per day.[56]

In addition to dust from earth movement, particulate emissions will be generated from refuse being dumped. This will amount to about 150 pounds of particulates based on an inflow rate of 3,000 tons of refuse per day and an emission rate of 0.05 pounds/ton.[57]

A quantitative estimate of the impact of particulate generation associated with the project indicates that approximately 70% of all dust created would fall within the site (except when filling occurs near the eastern edge of the site) and about 15% will remain airborne. (The latter consists of particles too small to fall out; they are eventually

removed by condensation and precipitation.) The remaining 15% would fall beyond the site's perimeter in the prevailing wind direction sector. The annual dust fallout beyond the site's perimeter is not expected to exceed 0.07 grams/meter^2 anywhere. This probably represents much less than half the existing dustfall in the area resulting from agricultural activities.[58]

The atmospheric concentrations of particulates from the project typically will not exceed 2 micrograms/m^3 at 1,000 meters from the source, decreasing to 1 microgram/m^3 at 2,000 meters. However, during periods of strong winds (mostly in the late afternoon), these concentrations could be increased by a factor of 4 or 5. The typical existing particulate concentration level in Livermore is about 70 micrograms/m^3, with the 100 micrograms/m^3 standard exceeded about 15% of the time; the landfill site operations should not increase the incidence of above-standard levels beyond the site's perimeter. There are no measurements of ambient levels at Altamont but the consulting meteorologist estimates that it would be about half that at Livermore.[59]

4. Energy

Handling of solid wastes by Oakland Scavenger Company currently consists of two basic steps: collection and landfill disposal. The collection trucks travel directly to existing disposal sites. The proposal calls for additional steps: collection, transfer station operations, transportation to landfill site, and landfill site operations. The middle two steps represent the direct increment of energy consumption attributable to the project.

The greatest amount of energy consumed in a typical landfill operation is in the collection process. Approximately 250,000 BTU per ton of waste is required.[60] (BTU = British Thermal Unit, a measure of energy. Useful conversions: 10,000 BTU = 1 kilowatt-hour (kwh); 6,250,000 BTU = 1 barrel of fuel oil.) The amount of solid waste collected is approximately 3,000 tons per day, thus, 750 million BTU per day are consumed by this phase of the operation. Disposal in sanitary landfill requires about 30,000 BTU/ton. About 90 million BTU are now used per day.

The project calls for a transfer station utilizing 400 horsepower. Theoretically, one kilowatt-hour equals 1.34 horsepower (hp) per hour. Since no machine is 100% efficient, the practical conversion of one kwh to one hp/hour is usually used. Assuming that the energy needed by the transfer station is used 24 hours a day (for lighting, ventilation, etc.), then 400 x 24 = 9,600 hp = 9,600 kwh will be used each day. This represents 96 million BTU/day.

Additional energy will be needed for transport of wastes from the transfer station to the project site. In a five day per week operation, approximately 130 round-trips per day would be required. The round-trip mileage from the proposed San Leandro transfer station to the Altamont site totals 66. The type of trucks proposed for the transfer operation usually get four miles per gallon of diesel fuel; there are 82,000 BTU in one gallon of diesel fuel. Therefore, the amount of energy consumed each day in the transportation phase of the operation may be computed: 130 round-trips/day x 66 miles/round-trip ÷ 4 miles/gallon x 82,000 BTU/gallon = 176,000,000 BTU/day.

About 3,300 tons of waste are expected to be processed at the proposed transfer station each day. Ferrous metal recovery, it is estimated, will remove 5% or 165 tons. The remaining 3,135 tons would be taken to the Altamont site. Operations there, at 30,000 BTU/ton, would total about 94,000,000 BTU/day.

The total energy required for the proposed project (ignoring the collection component, which would remain essentially the same with or without the project) would be 96,000,000 BTU (transfer station) + 176,000,000 BTU (transportation to Altamont) + 94,000,000 BTU (operations at landfill) = 367 million BTU per day. Of this, the transfer station and transportation phase (272 million BTU) roughly represent the additional energy required as a result of the project.

Complicating these figures is the planned recovery of ferrous metals from solid wastes as a part of the transfer station operation. This operation would involve conveying, shredding, and extracting ferrous metals from

the waste stream. Shredding and conveying require approximately 500,000 BTU/ton; separation uses 130,000 BTU/ton.[61] Typically, about 5% of the waste stream, or 100 pounds per ton of waste, can be recovered as useable ferrous metal.

The energy significance of ferrous metal reclamation depends on use of the reclaimed scrap. The two main markets for scrap are remelting in steel mills to make new steel and copper mining. The latter uses shredded cans as "precipitation iron" to recover copper from low-grade ore. About 15% of all U.S. copper is produced by this process. Reclaimed scrap from Western states, including that of Oakland Scavenger Company, has mostly been used for copper mining rather than new steel making.

There is a potential for net energy conservation from the project if sufficient reclaimed ferrous metals are processed to make steel, since less energy is required in using the scrap than is necessary when using virgin materials. If all scrap estimated recoverable from the project is used for steel making, the net energy gain would be about 3,000 million BTU per day from the entire solid waste disposal operation. (After separation, additional energy is required to transport, cast, and shape the scrap: 725,000 BTU per the 100 pounds recoverable from one ton of refuse.[62] The total energy "cost" of the project equals the sum of energy required for collecting, conveying, shredding, separating, transporting of unused materials to landfill, other transfer station operations, and landfill site operations. Total energy consumption for ferrous metal recovery equals the amount of energy expended in shredding and conveying (500,000 BTU/ton) plus separating (130,000 BTU/ton) plus steel making from scrap (750,000 BTU/ton), totalling 1,355,000 BTU/ton. Energy required to make steel from virgin materials is 2.64 million BTU per 100 pounds. Thus, about 1.285 million BTU/ton (2.64 million BTU/ton minus 1.355 million BTU/ton) would be conserved; at 3,300 tons per day, this would amount to 4,240 million BTU conserved each day. Collection requires 250,000 BTU/ton times 3,300 tons/day = 825 million BTU/day; as calculated earlier, the rest of the project operations would require 367 million BTU/day. Thus, the total energy which could potentially be conserved, if all the reclaimed ferrous metals were used in steel making, would be about 3,048 million BTU/day (4,240 million minus 825 million minus 367 million).

If all scrap is used for copper mining, as is the case at present, then an additional 2,080 million BTU/day should be charged to the energy cost of the operation (separation @ 130,000 BTU/ton + shredding, conveying @ 500,000 BTU/ton = 630,000 BTU/ton x 3,300 tons/day). The overall energy gain or loss is impossible to determine without detailed analysis of energy flows in copper mining, including energy costs if scrap is unavailable, and is beyond the scope of this report.

The most potentially significant energy impacts of the project appear when alternatives to dumping of refuse are considered. Considerable research has recently taken place on utilization of solid wastes to generate energy. A study by the Stanford Research Institute[63] for the Pacific Gas and Electric Company examined various processes which have the potential for generating fuel for utilities from refuse. The processes studied were:

<u>Incineration</u>

- Burning to raise steam (determined to be unsuitable for the production of energy for utility distribution)

- Preparation of boiler fuel (using the refuse to supplement regular firing by oil or gas, with 10-20% refuse and 80-90% fuel oil or gas)

<u>Advanced Processes</u>

- Purox process (developed by Union Carbide; uses concentrated oxygen gas as a reactant to convert solid waste to clean fuel gas that has a heating value of about 310 BTU per cubic foot)

- Landgard process (Developed by Monsanto Corporation; uses pyrolysis--chemical decomposition through high heat--to produce either a fuel gas or medium pressure steam)

- CPU-400 process (developed by the Combustion Power Company with EPA funds; air oxidation of refuse generates high-temperature, high-pressure gases which are used to drive a turbine generator. Technical feasibility is as yet unproven)

- Garrett process (developed by Garrett Research and Development Company, an Occidential Petroleum subsidiary; uses pyrolysis to generate fuel oil and recover iron, aluminum, and glass)

Production of Substitute Natural Gas

- Methanation of low-BTU gas from pyrolysis (tested on laboratory scale)

- Purification of the off-gases from anaerobic digestion of refuse in a landfill (anaerobic digestion is being practiced but so far the gas yield is low. The purification step remains to be be tested)

SRI used four criteria for screening processes before arriving at those above: good pilot scale operation of process; definite plans and funds for semi-commercial or commercial plant; lack of apparent major technical problems; engineering organization for design. The study concluded, after applying economic considerations to each process, that the Union Carbide Purox process was the most viable in terms of the criteria applied.

A more intensive study of the Purox process was carried out by the Ralph M. Parsons Company for Pacific Gas & Electric Company, and the East Bay Municipal Utility District in association with Oakland Scavenger Company.[64] The report calculated that a 1,750-ton per day plant to convert wastes into gas was feasible and would produce 42 million cubic feet of gas each day. with a heating value of 13,020 million BTU (at 310 BTU/cubic feet).

(Each ton of waste would produce a net of about 3,100 BTU under actual operating conditions.) Energy consumed by the process itself would be only about 1,000 BTU/day. The gas produced is of lower heating value than pipeline quality gas (which has a heating value in excess of 920 BTU/cubic feet), but can be used without further processing to serve industrial customers. The report noted that there appears to be sufficient industrial customers in close proximity to the San Leandro transfer station site to make such an operation economically feasible. Other possibilities for transforming the output gas to useable form include converting it to methane, converting to methanol, and converting to electric power. Of all these alternatives, only the last does not appear practical because of high cost per unit output.

The major stumbling block to energy recovery is the high initial costs of construction--estimated at about $45,000,000.[65] Oakland Scavenger Company, a private corporation, is understandably reluctant to take such a large risk of capital at this time. Until energy recovery can be shown with a high degree of certainty to be profitable, or unless large public investment is made to underwrite the process, solid wastes which could potentially supply up to 10 percent of East Bay residential energy needs would be buried at the Altamont site. In addition, approval of the project without a clear commitment to future energy recovery could retard development of this energy source; the investment in the landfill operation and equipment and the relative ease of this method of waste disposal might prove to be a disincentive to eventually obtaining the significant energy resource contained in refuse.

Additional conservation (versus generation) of energy would occur if additional materials other than ferrous metals were recovered from the refuse. The recovery of glass and aluminum would conserve approximately 4,950 million BTU/day. (Glass from recovered materials saves .29 million BTU/ton over that made from virgin materials; the saving for aluminum is 1.21 million BTU/ton.[66] Savings per day equals .29 + 1.21 = 1.5 million BTU/ton x 3,300 tons/day = 4,950 million BTU/day.) Economic factors will determine when these materials will begin to be recovered. As is the case with direct recovery of energy, approval of the project may delay the start of additional material recovery beyond the point where it would begin to clearly serve the public interest.

Mitigation of these problems may be achieved through periodic review of the project involving a clear public commitment to resource and energy recovery independent of profitability issues.

B. Cultural Impacts

1. Land Use

The project will involve changing the land use from agriculture to a sanitary landfill with associated operations. The landfill operations at any one time would be usually confined to 100 acres or less, although filling would ultimately take place over much of the site. Agricultural uses would continue over the great portion of the site which would not be utilized for filling at any one time. When the capacity of the site is exhausted, reversion of the entire property to agricultural uses would take place. This would not occur until well into the next century. The topography resulting from the massive filling of canyons would be relatively flat and therefore more developable than at present. This does not mean that development is likely to occur, especially if the area is as remote from urban centers as now. Any forces which would result in development of the site in the next century would likely have occurred regardless of the project.

The landfill operations would also involve storage and maintenance of machinery and trucks and the installation of some service infrastructure such as piping, fencing, and paved and temporary unpaved roads. Land use impacts from the project other than the _prima facie_ changes resulting from the project are not of great significance.

The windy conditions of the area combined with the earth and waste movement operations could result in dust and litter disturbances to agricultural uses on the site. The predominantly agricultural uses in the site vicinity, however, are not expected to be significantly affected by the project.

Mitigation:

Mitigation of dust can be controlled by daily sprinkling of the fill area as needed. Litter control is expected to be mitigated through the use of movable fences in the immediate fill area.

2. Public Facilities and Services

The project is not expected to generate major impacts from the provision of on-site services.

A front gate, which can be locked after operating hours, will be provided in the existing barbed wire fence surrounding the property. An attendant will reside on the site.

A Pacific Telephone and Telegraph cable facility is planned to cross the site. Negotiations are underway between Pacific Telephone and Telegraph and Oakland Scaventer to situate that facility to avoid fill or excavation areas.

Under California legislation adopted in 1970, open burning of solid wastes at disposal sites has been prohibited since January 1, 1972. If a fire occurs, dirt which would be maintained at the working face is available to smother it. A water supply would also be available on the site. The project will require about 10,000 gallons of water per day, mostly for dust control. The major problem with on-site provision of services may be water supply. If possible, a supply will be developed from on-site water wells. If investigation of pump rates shows an inadequate supply (a definite possibility due to the small amount of local groundwater, water from off the site would be purchased and imported either by tank truck or pipeline. The South Bay Aqueduct, one mile west of the site, could supply project water needs, subject to agreement with Zone 7 of the Alameda County Flood Control and Water Conservation District and approval of the State Department of Water Resources. A potential reservoir site is shown on the Site Plan in Section 16 at a point high enough to provide gravity supply to the entire site.

3. Traffic and Circulation

The effects of transfer truck trips on Davis Street will be minimal. Davis Street presently operates at C Level of Service and the addition of 240 truck trips will not materially affect this situation.[66] As was previously noted, all of the traffic associated with the operation of the transfer station (garbage trucks, private dumpers and transfer trucks) will be evaluated by the City of San Leandro in their consideration of that proposal.

The proportionate volume increased in both daily and peak hour traffic are too small to be meaningful in their effect on operations for those portions of the freeway system that are relatively level or that have more than four lanes. On Interstate Route 580 between Castro Valley and Dublin, however, the freeway is a four lane section with sustained grades at both ends. The daily total of 240 trips per day represents an increase of approximately 3 percent over current estimated daily truck volumes of 8,500 vehicles. Assuming that these trucks meet performance standards of similar vehicles, the effect on existing operational characteristics would not be significant.[67]

On Altamont Pass Road, traffic to the landfill site will include the 120 transfer trucks plus an estimated 20 conventional refuse trucks and 10 cars daily. The combination of a sustained gradient with circuitous horizontal alignment and extensive no passing zones will have a definite impact on traffic flow. However, because of the low total traffic volume--280 current daily traffic plus the 300 trips generated by the project--no congestion of any significance should develop. There may be problems of truck maneuvers because of current standards of geometrics at intersections in the interchange area, the narrower sections of Altamont Pass Road, and at the entrance to the project site.

The problems at the site's entrance involve restricted sight distances and conflicts from transfer trucks crossing over Altamont Pass Road to enter the site. The project sponsor's proposal to solve these problems by widening

Altamont Pass Road and providing a left turn stacking lane for vehicles entering the site from the west is being studied by the County Road Department, along with alternative solutions. The Road Department, which issues encroachment permits for any major intersections adjacent to or encroachments in County road rights-of-way, will ultimately determine what alignment changes and road improvements are necessary prior to commencement of operations. As a condition of approval in the encroachment permit the project sponsor will be required to bear all costs for road improvements attributable to this project.[68]

Other problems on Altamont Pass Road may require spot improvements after operations commence and locations of deficiencies become apparent

By the year 2000, the number of transfer truck trips to and from the site is expected to increase by approximately 50%, from 240 to 360. This increase is not enough to materially change conditions or affect operations from those previously described.

4. Aesthetics

a. Visual

Impacts of the project on the visual qualities of the site are both short term and long term. Short term impacts, actually long term for most planning or other purposes, would last the active life of the landfill operation (60-70 years) and result from the active alteration of the site by earth-moving equipment and other machinery. The (very) long term impacts would be due to the ultimate topographic alteration of the site in its final state.

Shorter term impacts:

A sanitary landfill is a massive operation requiring bulldozers and scrapers to move dirt, landfill compactors and motorgraders to grade temporary roads, and large trucks to deliver waste. For at

least the 100 acres in active fill at any one time, and for the corporation yard near the entrance to the site and access roads on-site, the perception of open space will be lost. Noise and general activity will preclude any feelings of tranquility or isolation which the site area would otherwise impart. It should be noted that very few people utilize this area, which has no developed attractions, for such a purpose.

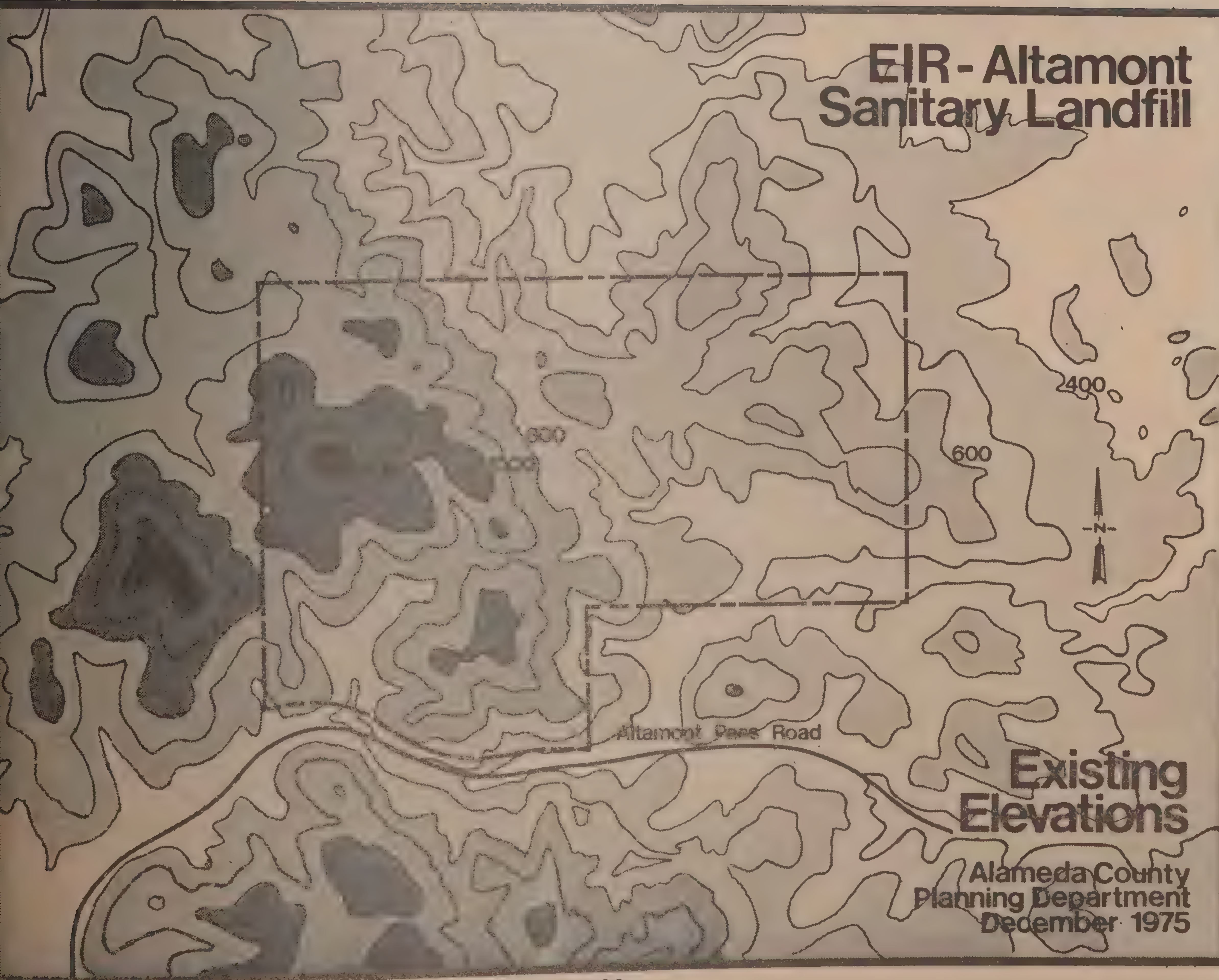
Both fill and earth borrowing areas (to cover the fill after each day's operations) will be visible from various view corridors, especially in the later stages of the proposed plan when fill would reach significant elevations. Fill Area 1 will not be visible from the Livermore Valley even at the projected final elevation, nor will it be seen from the Bethany Reservoir, which is a potential site for recreational development. It would be visible from the top of Brushy Peak, another potential recreational area, upon reaching an elevation of approximately 800 feet. It will also be visible from Clifton Court Forebay area in the Delta Region. After the fill reaches an elevation of 1,100 feet (not expected to occur until about the year 2000), operations will be seen from the present staging area for the California Aqueduct Bicycle Path at the north end of Bethany Reservoir. The buttress beyond which the fill will be placed will be prominently visible from Altamont Pass Road. The landfill operations and fill will be mostly screened from Interstate 580 except for a few narrow view corridors through the intervening hills. None of these view corridors would allow seeing the project with a vision angle of less than 45 degrees from the road. Drivers of vehicles would normally not be expected to look at such angles unless attention was drawn by the activity on the site. Passengers may more easily notice site operations and active fill areas.

The project is expected to have an impact on visibility in the area because of associated dust. Local visibility will be correspondingly reduced.

The windy nature of the site and its vicinity can be expected to generate litter and debris over a fairly wide area if controls are not instituted. Paper and other light refuse would be lifted and blown by the high winds common to the area and could cause a significant impact upon the aesthetic appreciation of the Altamont Hills. Uncontrolled litter would be blown in an easterly direction much of the time due to the prevailing westerly winds and might easily reach Interstate 580 during peak wind periods.

Long term impacts:

The plan for the project calls for existing canyons on the site to be filled and covered with dirt borrowed substantially from non-fill areas. The site's final state will reflect this activity. The map on Page 86 depicts existing elevations of the site and its vicinity; the map on Page 87 shows the final elevations resulting from the proposed plan. Essentially, the site will, if manipulated according to proposed plans, appear "smoother" than it does now, with gentle variations in elevation replacing the existing canyon and hill topography. Prominent hills are proposed to be retained, although in some cases fill will encroach upon their higher elevations. It is planned that, upon completion of the project, all manipulated land will be reclaimed for agricultural use. In general, the overall site will then appear reasonably natural. However, filling the canyons will result in large visible terraced faces. (See diagram entitled Details on Page 12). These will typically consist of 2:1 slopes 40 to 46 feet high between 15 foot benches, as shown in the diagram. There are six such terraced slopes proposed for the project, with final elevations ranging from 700 to 1,025 feet above sea level, and heights above ground level ranging from 100 to 300 feet. They will appear very similar to terraced highway cuts such as those which can now be seen along Interstate 580 in Dublin Canyon. Slopes will appear clearly artificial and unnatural. While generally not visible from Interstate 580, they would be prominent from Altamont Pass Road. They will also be apparent from various view corridors to the northeast, east, and southeast of the project site.


EIR - Altamont Sanitary Landfill
400
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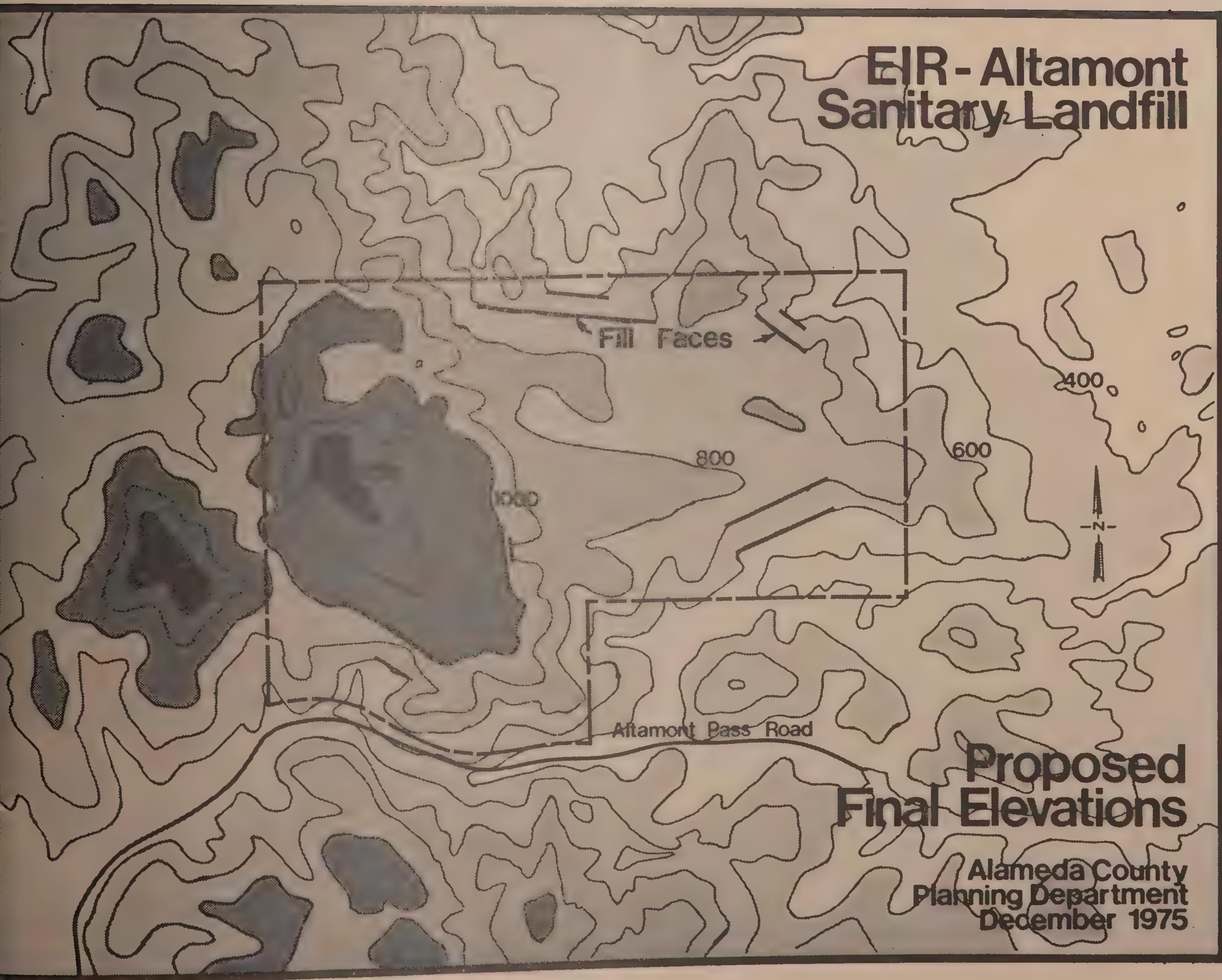
Altamont Pass Road
Existing Elevations
Alameda County Planning Department December 1975


EIR - Altamont Sanitary Landfill
Fill Faces
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Altamont Pass Road
Proposed Final Elevations
Alameda County Planning Department December 1975

The overall visual impression of the site after project completion would consist of very gently rolling topography sloping gradually from west to east punctuated by steep, terraced, unnatural appearing slopes. It will be evident that human manipulation of the land has taken place (mostly due to the terraced slopes) of an order of magnitude similar to that associated with highway and railroad construction in the vicinity (for similar acreage).

Mitigation:

The visibility of such operations from various view corridors can be mitigated through preservation of ridges and knolls which obscure these views form highways and potential recreation areas. Another mitigating measure would be to reduce the allowable level of fill, especially where proposed fill elevations exceed 900 feet in the western portion of the site (Fill Areas 1 and 5).

The low level of traffic on Altamont Pass Road may serve to mitigate adverse impacts on the viewshed from that County Scenic Route. The increase in traffic caused by the project would presumably consist of vehicle passengers who are not travelling to the site in search of scenery. By far, the greatest numbers of people who might see the site travel through the area on Interstate 580 (ADT 30,500 in 1974).[69] Higher elevations of fill operations would be visible from the freeway through narrow view corridors, but lowering the allowed fill elevations as suggested would eliminate virtually all views of the site operations. Reduction of fill would also reduce the height of the terraced final fill faces which constitute the most severe long term visual impact of the project. The fill faces could also be completed in such a way as to reduce the proposed slope; an accompanying redesign of their drainage benches might then be feasible which would mitigate their unnatural appearance.

Mitigation of dust generated by project operations can be achieved through strict control consisting of liberal water spraying of active areas of the site at regular intervals and whenever meteorological conditions or observation indicate additional existing or potential dust problems.

Mitigation of litter can occur through the use of moveable fences surrounding the active fill area. If wind conditions warrant, several perimeters of fences may be required and would be successful in trapping high percentages of blowing litter and debris. With severe wind, it is not anticipated that litter can entirely be contained on-site.

Immediate reseeding, upon completion of each fill area, would soften visual impacts of barren ground surface.

b. <u>Noise</u>

There will be an increase in noise on site and in the project vicinity generated by the project's operations. Since the site is distant from noise sensitive areas and is isolated from the general public, no significant impact due to noise is expected at the site. If recreation uses develop in the vicinity, there may be some noise intrusion on the users of these areas. Since the periods of peak site activity (weekdays) do not coincide with the periods of peak recreational activity (weekends), the effects of noise should be minimal.

5. Archaeological and Historical Sites

The proposed project would result in the destruction of all surface features in the fill area proper, including those previously mentioned in the Archaeological and Historical section of this report. Because

of the differing significance among the six sites, the impacts of the project on each will be discussed separately.

Site 1 - Bedrock Mortar. Site 1 would be subject to destruction by the proposed plan, as it lies in Fill Area 2. Since this feature is the only clear-cut evidence of prehistoric utilization of the 1,600 acres that were the subject of the archaeological reconnaissance, its significance is greater than if it were one of several such features. Although the reconnaissance and evaluatory investigation failed to disclose artifacts other than the mortar cluster, the limited scope of these investigations cannot rule out the possible presence of other cultural material in association with the bedrock mortars. Of particular importance would be information that the bedrock mortar site area might provide with respect to patterns of exploitation for the general region, that is, information regarding prehistoric settlement-subsistence systems.

Mitigation:

The site should be preserved, if at all possible, for archaeological investigation at some future time. The plan for the project indicates that Fill Area 2 will not be utilized until shortly after the year 2000; if investigation is not completed by then, one of the other fill areas should be utilized until professional interest is satisfied. Clear warning markings surrounding Site 1 and its vicinity should be placed upon commencement of any operation at the site in order to prevent accidental alteration. The consulting archaeologist believes that destruction of this site without adequate scientific investigation would constitute a loss of significant potential knowledge.

Site 2 - Stone Foundation. Although this site is not within any planned fill area, associated activities such as road building could affect the site adversely. The site has potential for providing details on the early historic utilization of the site, information usually not obtainable from

written documents. Minimally, it would be scientifically useful to know the function of the stone feature and its time of utilization. The results of the consultant's evaluatory excavation suggest that more focussed investigation could shed light on these questions.

Mitigation:

It is recommended that the stone foundation be preserved intact and care be taken not to damage or destroy it inadvertently. Warning signs should be placed around the site to guard against this possibility. If damage to it proves necessary for the successful implementation of the landfill process, the site should be investigated by archaeological techniques.

Site 3 - Circular Depression. Site 3 was determined to have no archaeological significance. Project impacts would be nil and no mitigation measures required.

Site 4 and 5 - Rock-Walled Structures. Site 4 lies within Fill Area 2 and would be destroyed by the planned landfill activities. Site 5 is not within any designated fill area but does lie within a planned earth borrow area, which would lead to its destruction. On the basis of similar size and configuration, it seems reasonable to assume that both structures were used in a similar manner. With respect to the dating and function of the structures, it would be important to determine in either case whether they were historic features, possibly linked with Site 2 (the stone foundation) as part of the sheep herder utilization of the area, or whether they were prehistoric features, possibly used seasonally in association with Site 1 (the bedrock motars).

Mitigation:

Since evaluatory investigations at the two sites failed to disclose any information regarding time of use or function, it is recommended that neither site be modified or damaged without additional investigation designed to obtain this information. Warning signs should be placed around the sites. Fill and borrow which would affect Sites 4 and 5 should not begin until these further investigations have taken place.

Site 6 - Cabin. The information and the location and condition of this cabin might well be of interest to local historians or to west coast social historians concerned with the institutional and public responses to the threat of air attack during World War II. Care should be taken to preserve the cabin. It does not lie in any fill or borrow area but sits atop the highest knoll on the site, which would be preserved according to the proposed project plan.

6. Existing Solid Waste Disposal Sites Within Alameda County

Once in operation, the Altamont landfill site will receive the refuse from Albany, Emeryville, Oakland, Piedmont, San Leandro, San Lorenzo, Castro Valley and Hayward based on a combination of existing Oakland Scavenger Company contracts and closings of sites in the western portion of the County. The City of Berkeley presently collects its own garbage and eventually will build its own transfer station for resource recovery or for composting of the organic portion of the waste. Thus, the extent that Berkeley would use the Altamont site is unknown at this time.

Since most East Bay dumps will be closing in the near future, the project will not directly affect their operations. Of the three remaining disposal sites in the County, Fremont (Durham Road), Turk Island and Eastern Alameda County (Vasco Road), all will be indirectly affected by the project and one will be directly affected. The indirect effects take the form of relieved pressure to accept the wastes generated in the northern Bay Plain area of the County once the other disposal sites close. Fremont and Eastern Alameda County sites would continue to meet present and future commitments in their service areas. At projected rates of infill, the Fremont site has capacity for 25 years of service and the East Alameda County site for 20 years of service under present permit (see table on Page 51). Turk Island is a relatively low volume - low capacity disposal operation which, at present fill rates, will be closed by 1982.

The project will directly affect the East Alameda County site in the form of competition for waste generated in the Livermore-Amador Valley. Depending on relative disposal costs at both operations, the project could attract clients previously serviced by the East Alameda County Disposal site.

7. Public Plans and Policies

a. Zoning

The project would have no effect on zoning policies. The use is acceptable within the scope of the "A" District under certain conditions which are the subject of the pending Conditional Use Permit determination. The site's classification in the "A" District is consistent with General Plan implementation. As there is no reclassification involved, there would be no pressure or precedent for owners of adjacent properties to request reclassification which might be contrary to General Plan policies.

b. General Plan

The essential character of the Altamont facility limiting landfill to 100 acres at any one time to be subsequently returned for agriculture does not violate policies of the County General Plan or the Open Space Element for permanent retention of agricultural uses. As discussed in detail in the Aesthetics section of this report, exposed fill faces will encroach into the visual corridor along Altamont Pass Road. Impacts are considered moderate, however, given the local context of railroad cuts and freeway fills, the slow development of the project fills, and the ability to mitigate some of the effects by seeding and mulching.

c. Agricultural Preserves

It is questionable whether the landfill is a "compatible use" under the Williamson Act. The intent of the Act is to preserve agricultural land in its natural state and discourage its conversion to urban uses by making it economically viable in the face of increasing assessed valuation due to urban pressures.[70] According to project plans, only 100 acres would be used as landfill at any given time and the remainder would be kept in its present agricultural uses until needed. Thus, in the long term, the land as a whole would be kept in agricultural and open space uses. In the short term, however, there would be 100 acres of the site devoted to a use which is incompatible with the types of uses contemplated under the Act.

If the use is allowed under the contract, several problems could arise. The State may not approve such a use. As the assessment would be on an income generation basis, leaving the property in the preserve may increase its tax liability above its unrestricted value, and perhaps end up being more costly over the years than cancellation. (However, the land would be retained in the program and impact on the program would be nil.) It is not known whether any other jurisdictions have landfill operations in preserves.

If the Board of Supervisors determines that landfill is not an appropriate use in preserves, the contract would have to be cancelled. Cancellation must be approved by the Board of Supervisors based on findings that cancellation is in the public interest and that no other property is suitable for the use. It would also involve payment to the County of a cancellation fee equal to one half the unrestricted assessed value of the property (one eighth full cash value). This is considered deferred taxes and is to be deposited in the State General Fund. Under certain circumstances, with the approval of the State Resources Agency, the County may waive or defer all or part of this fee; however, these circumstances do not appear to be present in this case. It should be noted that cancellation would only be necessary for that property actually to be used for fill within 10 years. As to property needed after that time, the contracts can be nonrenewed. Such contracts would run out after the 10 year period leaving the land free from restriction at that time but avoiding the cancellation fee.

Should the project require cancellation or nonrenewal of the contracts, it would mean the eventual withdrawal of approximately 1,540 acres from the preserve program. This represents slightly less than one percent of the land in preserves and under contract in the unincorporated area of the County.[71] This would mean that the property would be assessed at its unrestricted value which would be approximately four times its restricted assessed value; thus it would generate about four times its present tax revenue, or more depending on its assessment as a sanitary landfill. The land is not considered prime agricultural land, therefore, cancellation of the contract would not be contrary to that aspect of the program. As noted above, the bulk of the land would be in uses consistent with the program. Thus impacts on the program would be confined to that portion of the site actually being used for fill at any time.

d. Alameda County Health and Safety Code

Operation of the Altamont landfill would constitute consolidation of waste disposal operation of Oakland Scavenger Company greatly easing enforcement responsibilities of the County Health Officer in carrying out the Health and Safety Code. Initial waste processing at the transfer station would create refuse of fairly uniform consistency simplifying handling and reducing problems of litter, fire, odor, etc. Proposed operation satisfies the definition of a "sanitary landfill" and would replace marginal operations in more environmentally sensitive areas of Alameda County.

e. Solid Waste Management Plan for Alameda County

The draft Solid Waste Management Plan (SWMP) has not yet received concurrence by cities in the County nor has it been adopted by the Alameda County Board of Supervisors. Plan policies may change prior to adoption.

Technical information in the draft SWMP indicates that neither complete reliance on sanitary landfill, nor its elimination, are warranted in light of new resource recovery technologies undergoing development. Quantities of wastes requiring landfill disposal will decrease significantly as future recovery methods come on line enabling useable waste materials to be recycled, and other fractions of the waste stream to be converted to economically marketable by-products. However, some landfill capacity must be available on a long term basis for non-processible wastes and residues, and in the event of interruptions in future resource recovery systems caused by plant break-downs or off-markets for recovered resources.

High percentage resource recovery systems have not yet proven economically feasible to attract private investment of necessary high venture capital, and presently would require public subsidy. Costs for needed facilities and systems, when credited with marketable by-products, probably will become competitive with landfill in the future.

Thus, need for some landfill capacity now and in the future is apparent. The Altamont project would satisfy county-wide solid waste disposal needs through the twenty year planning period of the Solid Waste Management Plan under present rates of landfill with limited material recovery, and would assure much longer disposal capacity with increased material recovery.

The draft SWMP recommends against proliferation of disposal sites for environmental reasons. While the project would be a new disposal site, it does not represent proliferation since it would provide capacity for many of the bay plain dumps being phased out. Its operation requires transfer stations where waste flow presently directed to several disposal sites would be concentrated, adding scale necessary for effective source separation, material and energy recovery.

The draft SWMP expresses concern that availability of ample landfill capacity would create a disincentive to recycling. While this may be true, absence of landfill capacity is not a reasonable alternative. Landfill is the end of the waste management system, with collection, transfer, processing and long haul preceding it and is a reflection of the economics of waste management instead of a determinant of the process. Changes in the system with increased materials or energy recovery would occur when economically more attractive than land disposal, or when institutionalized through revised franchise agreements with cities and other contracting jurisdictions. However, as discussed in the Energy section of this report (Page 74), investment of large amounts of capital on the landfill operation, transfer equipment, and transfer station (estimated at $7,000,000 by Oakland Scavenger Company[72]), would be added on to costs of any change in the system, and may retard development in waste recovery unless already amortized. This impact is moderate since facilities similar to the collection/processing/transfer stations required for the project are required for most recovery efforts and some transfer and land disposal would remain necessary after implementation of the recovery system. The impact could be mitigated by systematic review of cost information on long haul and disposal through the operational period, and addition of provisions in contracts of franchise agreements allowing every opportunity for additional resource recovery.

The Altamont disposal operation would be adaptable to breakthroughs in processing and reuse, which would be centered around transfer stations, and would add an element of long term reliability to the process. Assuming implementation of satisfactory environmental controls through various necessary permit procedures, and on-going environmental and fiscal monitoring, the Altamont landfill generally would not conflict with policies in the draft SWMP, and would have little significant adverse impact on achieving the underlying objectives of the plan to minimize waste generation and to recover as much material and energy from remaining waste as feasible.

f. State Solid Waste Management Board Policies

To the extent that the project would be a sanitary, safe and environmentally sound solid waste disposal facility, the project is consistent with State Solid Waste Management Board policies. As discussed in the previous section, the project may moderately retard progress in materials and energy recovery, which is a goal of the State Solid Waste Management Board.

The State Solid Waste Management Board has review and approval authority over new solid waste disposal sites under SB 1797. The Board has adopted an interim review procedure for sites to be placed in operation prior to State Board approval of the County Solid Waste Management Plan. After action on the Conditional Use Permit by the Zoning Administrator, the County Planning Commission, the agency of the County responsible for development of the County Solid Waste Management Plan, must report to the State Board on the relationship of the proposed facility to the proposed County plan. Within 45 days after receipt of all necessary information, the State Board at a public meeting will make a finding for or against the need for the facility.[73]

g. <u>State Water Resources Control Board (SWRCB) and California Regional Water Quality Control Board (CRWQCB) - Central Valley and San Francisco Bay Regions</u>

Permit procedures of the California Water Quality Control Board(s) assure that the project, if approved, will be consistent with SWRCB and CRWQCB policies. Prior to operation of the project, the regional boards must approve the site's classification and set discharge requirements.[74] The permit may be subject to review and approval by the SWRCB if issuance or nonissuance of the waste discharge report, the formal action of the regional boards setting standards and procedures for the waste discharge, is contested. It is policy of the regional board(s) to await action by the local jurisdiction on the required land use permit before conducting hearings and issuing final requirements for the waste discharge permit. Discharge requirements set by CRWQCB(s) would supplement local requirements, and must be adhered to by the operator of the disposal facility. The waste discharge permit would establish procedures for water-quality monitoring, and the operation would be subject to periodic inspection by the Board(s).

Based on information presented in the Project Description, Geology, Soils and Hydrology sections of this report, the site would appear suitable as a Class II-I disposal site (for Group 2 wastes) subject to proposed operating procedures, suggested mitigation measures and monitoring.

h. <u>Bay Area Air Pollution Control District (BAAPCD)</u>

The two most significant emissions from the project are particulates (dust) and odorous substances (gases). The District will review the project plans and determine whether these will exceed standards and whether proposed mitigation measures will be effective. Based on information from the consulting meteorologist and discussion with a representative of the District,[75] it would appear that with proper control and responsible operation of the project, emissions would not be a significant problem.

i. Other Agencies

No conflicts of the project with other federal, state, or local policies are known. Potential conflicts may exist because of the multiplicity of agencies dealing with the matter. The project EIR will receive broad agency and public distribution providing a forum for review of issues which may arise.

VI. Boundaries of the Impact Area

The boundaries of the area of impacts arising from the project include:

- The project site and its immediate vicinity
- The transportation corridor between the site and the proposed transfer station, especially Altamont Pass Road
- Alameda County as a whole, to the extent that the project would impact (favorably) upon the long-range problem of disposal of the County's solid wastes

VII. Unavoidable Adverse Impacts

Adverse impacts resulting from the project which cannot be totally mitigated include loss of open space and agricultural land during the life of the project; visual and physical alteration of the site; changes in vegetation and wildlife habitats and relationships on and off site; loss of and/or changes in natural soils; increases in noise, dust and visual disruption during operations on site; increases in levels of truck traffic, particularly on Altamont Pass Road and Davis Street; consumption and depletion of local water supplies; consumption of energy; burial of material and potential energy resources; and creation of an disincentive to resource recovery.

VIII. Alternatives to the Project

A. Alternative Methods of Solid Waste Disposal

Consideration of alternative methods of solid waste disposal has been the major area of study in preparation of the County Solid Waste Management Plan (SWMP), and will continue to receive emphasis in review of the plan and in efforts to attain the state solid waste management goal of 25% reduction of waste disposal in landfills by 1980 and currently recommended County goals of 67% resource recovery from solid waste by 1980, and 92% recovery by 1990. Section V of the draft SWMP is an overview of solid waste management technology and section VI presents an economic analysis and feasibility study of the alternative systems. Responses to the Draft SWMP as contained in its Final EIR add to the discussion of alternatives. Discussion of alternatives in the manner undertaken in the solid waste management planning effort is beyond the scope of this report and the Draft SWMP and its EIR should be consulted for detailed analysis.

Considerable basic and applied research of methods for extracting additional values from waste materials prior to final disposal has been accomplished or is underway. In these processes, primary materials, secondary materials, chemical or energy resources are extracted from the waste stream for subsequent use, thereby conserving natural resources and also landfill space. Of these, materials recovery processes including separation at the source and centralized separation have been proven in full-scale applications, or in pilot application, and have immediate promise for reduction in the total amount of waste requiring land disposal.

Source separation is accomplished by hand-sorting of paper, ferrous and non-ferrous metals, and wood at the site obtaining a material of relatively high purity, and which generally is marketable, with value exceeding collection costs. Source separation is particularly effective at commercial and industrial operations where the waste stream is relatively uniform and marketing and transportation are simplified. The incentives to commercial and industrial firms to separate the waste is two fold. The separated waste can be sold or given to the scrap processor, and disposal fees are avoided.

For materials such as paper that are easily contaminated, source separation is the preferred recovery technique. Prospects for increased newspaper recycling are excellent since designs are underway for a newspaper de-inking and pulping plant with a capacity of 100,000 tons per year at Richmond in Contra Costa County.[76] Source separation also could be effective at the household level, where recyclable materials could be separated and collected independently from remaining wastes. Currently, efficient source separation of residential refuse is limited to newspapers. Source separation of other residential wastes is costly and low in efficiency when collection is considered, but is potentially feasible with public education and cooperation. As much as 16% waste reduction by weight has been achieved in very small scale pilot studies conducted by EPA.[77]

Centralized separation at the transfer station from the mixed wastes collected is part of the Oakland Scavenger Company proposal. The process would include some handpicking and sorting, shredding of the waste, and magnetic separation of ferrous metals. These processes are proven in numerous full-scale applications, and would lead to recovery of up to 5% of the overall wastes.

Additional processes have been demonstrated in pilot applications to recover non-ferrous metals such as aluminum, copper, brass, and zinc, as well as glass and combustible materials. Methods under study include air separation, screening, flotation, heavy media separation, optical sorting and Eddy-current metal separation. These processes have not been sufficiently proven to offer large scale application, but future application is promising, particularly for recovery of non-ferrous metals which have a strong market and are not as sensitive to transportation costs as other materials. Transportation is a high cost factor in glass recovery and centralized glass separation and recovery is not promising unless technology advances allowing color separation and increased purity. Paper is easily contaminated and centralized recovery is not promising unless as an element of a light fraction of the waste useful in a combustion process. Overall, Oakland Scaventer in its project report indicates that 10% front-end materials recovery may be achieved in the future, and the draft SWMP states that up to 12.9% of materials may be recovered in the Central Metropolitan and Eden Planning Units after 1980.

In addition to front-end materials recovery processes, alternative waste management processes increasing recovery include composting, energy recovery, pyrolysis, chemical conversion, and heat recovery from incineration. Large scale adoption of some of these processes will be necessary to achieve state goals for 1980 and local goals for 1980 and 1990.

Two processes for large-scale energy recovery and composting have progressed through the feasibility study stage and present the highest probability for future implementation of any of the systems under study.

The East Bay Energy and Resource Recovery System (EBERRS) proposes use of a pyrolysis process developed by the Union Carbide Corporation to convert solid waste and possibly sewage sludge into a synthetic gas or syngas. There are four alternative methods of syngas utilization: (1) conversion to methane, (2) direct delivery to customer, (3) generation of electric power, and (4) conversion to methanol or ammonia. All except conversion to electric power appear economically practical in a feasibility study completed by Ralph M. Parsons Company. A minimum of 1,500 tons per day of shredded refuse (minus valuable metals and possibly glass) from the Central Metropolitan and Eden Planning Units would feed into the gasification process. It is possible that the East Bay Municipal Utility District could contribute 208 tons per day of digested sewage sludge (25 percent solids), but it would contribute little to the output. Schnitzer Steel Products of California has 90 tons per day of shredded combustible refuse available to feed into the plant. Thus, the proposed gasification plant under study could process at least 1,750 tons per day and possibly 2,100 tons per day by 1978, the earliest time a plant could be ready for operation. The 1,500 tons contributed by Oakland Scavenger is about 34.8 percent of the daily tonnage being disposed at the present time in landfills (4,300 tons per day).[78] As noted in the Energy Section, Page 79, the major stumbling block to implementation of the process is the huge capital investment required--estimated at about $45,000,000.

A composting system utilizing organic wastes to stabilize levees and agricultural land in the Bay Delta is the other alternative waste management system under investigation. A 1971 SPUR report entitled "A Solid Wastes Management System for the Bay Region" called for regional management of solid wastes, maximum recovery of resources from the solid waste stream and a proposal to use the organic portion of municipal refuse for island reclamation in the Sacramento-San Joaquin Delta. A pilot scale demonstration project was recommended to test this proposal. Subsequently, an Action Committee was formed under the sponsorship of ABAG (Association of Bay Area Governments) to obtain funding to conduct preliminary planning for the demonstration called the Bay-Delta Resource Recovery Demonstration Project.[79]

To date, initial concepts for conducting a pilot test and for forming an intergovernmental structure were developed in Stage I of a project to manage a three-year $7,000,000 pilot scale operating demonstration program (Stage II). Applications for federal financial support have been submitted. Also the State of California has allocated about $2,300,000 to the State Board for pursuing the project. However, the state funding support is believed to be contingent upon federal support. Subsequent to Stage II, the Bay Area could move into a permanent full scale operation (Stage III). At the present time, the Bay-Delta Resource Recovery Demonstration Board is seeking to obtain $500,000 financing for a one-year testing program (Phase I of Stage II) to answer several economic, environmental and technical questions which must be evaluated before the conceptual plan can be acceptable.[80]

The solid waste handling and processing involved in the demonstration project which would be conducted over a three year period would involve the processing of about 200 tons per day of municipal refuse and sludge from Berkeley and a similar amount from San Francisco near Sierra Point. After separating ferrous metals at transfer stations, the organic fraction of the refuse would be mixed with partially treated sewage sludge and composted near existing landfills. Then from each area the compost would be barged to Mandeville Island in the Sacramento-San Joaquin Delta for landfilling or dike-strengthening purposes.

In the event the demonstration proves to be technically and environmentally acceptable, the plan would then be a long term alternative (100 years or more) for waste disposal for the entire Bay Area. Estimates of costs of alternative solid waste management systems in the draft SWMP indicate that the Bay-Delta system is more expensive than other competing systems. Its future implementation may depend on the assignment of credits for the value of reconstituted Delta land, and reinbursement of the local community for the value. City of Berkeley has been instrumental in the development of this project and considers it a long-range solution for disposal of that community's solid wastes.

From the preceding discussion of alternatives, it is clear that landfills will be required for disposal of some wastes and residue in all of the alternative systems. As economical markets develop for more of the materials in the waste stream, quantity of wastes requiring land disposal will decrease. Both energy recovery and placement of compost in the Bay-Delta show promise for significant reduction in amount of waste requiring landfill. However, large scale implementation of either of these systems is not impending primarily because of economic considerations, but also because technology to accomplish the programs in an environmentally acceptable and reliable manner has not been proven. This when combined with the absence of dependable markets to assimilate all materials potentially recovered from the waste stream, indicates that landfill will remain the primary method of disposal through 1980, and would continue in an important role thereafter.

B. Alternative Landfill Proposals

Several larger landfill proposals have been put forth in recent years for long term disposal of Bay Area solid wastes. None of the projects have reached operational stage, and all have been disapproved or are currently in abeyance.

Several years ago Western Pacific developed a rail haul concept plan for removal of San Francisco waste to a distant landfill in Lassen County. The plan envisaged an initial 1,500 tons per day, 375 mile rail haul to a sanitary landfill on desert lands in Lassen County. Lassen County would accrue a revenue for each ton. Proponents visualized a conversion of desert lands to grazing lands. The site was capable of accepting all Bay Area refuse for several hundred years. Prior to completion of arrangements with the San Francisco scavenger companies, large scale disposal in Mountain View became possible and the rail haul plan was abandoned. The failure of the rail plan which appeared to offer a long term solution to the San Francisco and Bay Area problems prompted the SPUR study leading to the Bay Delta Demonstration Project discussed above. Nevertheless, some rail haul plan remains as a potential long-term alternative for distant landfilling of those wastes not susceptible to or that are residues from resource recovery processing systems.[81]

Kaiser Sand and Gravel Company proposed using Class II and III solid wastes to reclaim the Kaiser-Radum gravel pits resulting from a 775-acre sand and gravel mining operation north of the City of Pleasanton. The reclamation concept was approved by Alameda County by action taken on Q-88 in 1973. It was expected that as much as 3,500 tons a day of solid waste would be transported by truck or railroad from East Bay Cities. This proposal was approved by the Regional Water Quality Control Board in March, 1973, as a Class II landfill. Subsequently, Citizens Against Garbage Environment (CAGE) appealed to the State Water Resources Control Board which rejected the earlier approval of the Regional Water Quality Control Board. The State Board's ruling was appealed to the Alameda County Superior Court which set aside the State Board's decision for further hearing before the State Board. Subsequently, Kaiser modified its proposal to limit disposal to Class III wastes only. However, necessary Alameda County applications have not been made, and the project has no status at this time.

Envirosol, Inc., proposed to establish and operate for 25 years a regional solid waste disposal site in the Potrero Hills of Solano County near Suisan Marsh. The project was to include transport of processed and baled solid wastes by barge and truck from regional transfer stations. The project was disapproved by the Solano County Planning Commission, and was withdrawn by the applicant prior to appeal hearing by the Board of Supervisors.[82]

C. Alternative Design of Project

1. Alternative transportation

Rail transportation can be considered an alternative to truck hauling because both the Southern Pacific and Western Pacific railroads run along Altamont Pass Road next to the site.

Rail haul of shredded refuse would be more expensive and less reliable than hauling by 23 ton capacity transfer trucks as proposed.

Assuming a Davis Street transfer station, distance to the Altamont site is 33 miles.

The Draft County Solid Waste Element indicates that the break even point between truck and rail costs is a haul distance of 45 miles, with rail cost being least costly after 45 miles. Metcalf and Eddy[83] indicated that rail transit locally becomes potentially economical only when truck transit exceeds a 50 mile one-way haul distance and identified factors determining rail haul costs, such as distance, seniority districts crossed, number of switching points, operation by yard or main-line crew, weight and volume to be transported, and schedule frequency. Easley and Brassey Corporation uses 70 miles as a rule-of-thumb for economy of rail use noting that initial preparation and loading and unloading are higher for rail haul.[84]

A serious problem for rail shipment is shortage of open gondola cars required for transporting materials. In addition, construction of a spur or siding at the Altamont site would be difficult because of terrain

and more elaborate handling would be required to off-load the refuse and move it in place for deposit. Rail shipment would be significantly more concentrated, with large quantities of refuse arriving at one time, while trucks would arrive on a staggered, steady basis.

Construction of a transfer station to accommodate rail would be costly. The station would have to be built at a higher elevation since trains can not negotiate the depressed ramps proposed for transfer truck loading. Such a facility would be less flexible with respect to site utilization and would cause increased visual, noise, and litter impacts because of its elevation. Loaded rail cars would rest on siding awaiting scheduled transit, whereas loaded trucks would move directly to the disposal site. In addition, rail transit would not be controlled by the transfer-station or disposal site operator, and in the event of shortage of cars, strike or accident, a back-up transport system would be required. None of the direct traffic impacts identified for the project would occur for the rail haul alternative. However, rail haul would have its own set of impacts on local traffic at crossings and contribute to noise impacts already caused by the railroads. Construction of rail spurs would cause short and long-term impacts such as noise, dust, disruption and loss of vegetation and wildlife, temporary traffic interruption, and change in appearance of the area.

Barge transport of solid waste has been proposed in the Bay Area; it is currently practiced in New York City. The proposed San Leandro transfer station could load waste onto barges, but the Altamont site is at least eight miles from the nearest off-loading point in the San Joaquin Delta. Thus, although barge haul rates are low, some kind of transport link, probably truck, would be required and an entire sub-operation necessary to transport the waste this final eight miles, negating cost advantages. In addition, the potential for adverse environmental effects (from accidents, for example) is much greater in the ecologically sensitive and recreation-oriented Delta region than on the existing freeway and highway network of Alameda County.

It is technically possible to transport solid wastes in a slurry via pipeline. Pneumatic operations are currently in use in Sweden and at Disney World in Florida. The economics of long-distance pipeline require very large quantities of waste; in addition, many components of the waste stream are not subjectable to grinding to pipeline "consistency" without substantial equipment and operational costs. Furthermore, the adverse environmental effects of constructing a pipeline across the length of Alameda County would likely outweigh those associated with truck transport.

2. Lower Fills

Under this alternative, a limit would be set, as a condition of approval of the project, on the ultimate elevation that fill could reach. Limitation of fill height to about 900 feet in the western portion of the site (Fill Areas 1 and 5) would have a beneficial impact on the aesthetics of the project; many view corridors would then not see project operations.

A 900-foot limit would be sufficient to handle wastes until about 1985 in Fill Area 1 (See diagram, Fill Area 1: Section A-A, Page 9). If review of project aesthetics and landfill requirements in 1985 so determine, filling to higher elevations may be permitted. In general, for Fill Area 1, each 50-foot increment in fill elevation allows for about an additional five years of refuse disposal. Utilizing the other fill areas which are not as critically visible would still provide long-term (well into the next century) capacity for the County's solid waste. To the extent that total fill capacity is reduced under this alternative, pressure for recycling of refuse may be increased, generating beneficial impacts regarding energy and the policies contained in the County's draft Solid Waste Management Plan. The other impacts associated with the project would be little affected, since they are connected either with the existence of the project or with the rate of filling, rather than with the eventual total amount of fill. (To the extent that the project's life would be shortened, those impacts existing only for its duration would, of course, be correspondingly shortened).

Commitment to Fill Area 1 Only

This alternative involves granting the Conditional Use Permit for filling of Fill Area 1 only. Little change in impacts noted previously would be effected, except that those associated with the active phases of the project would be temporarily shortened. This alternative would allow complete environmental review for any further proposal for the site. Fill Area 1 would, at the final elevations currently proposed, provide solid waste capacity until about the year 2005. By that time, substantial new developments in technology, law, and environmental perceptions and knowledge may have occurred. Approval of Fill Area 1 only would assure that continuance of the project to other fill areas would depend on analysis which takes these intervening developments into account.

3. Time Limit

As a condition of project approval, any time limit may be set either on the life of the use permit or for periodic review of the permit. Setting a time limit on the life of the use permit would allow full review of the project and its benefits and costs upon expiration. At that time, the applicant's would submit detailed proposals for a new use permit. This alternative could prove advantageous, particularly if unforeseen problems dictate major changes in the plan now being proposed. Such problems might include any events ranging from changed land uses in the site vicinity to unexpected significant contamination of groundwaters. Setting a time limit on the use permit would create a risk for the applicants which may inhibit private investment of capital in the project plan. Some extra expenses for the applicants would be necessary for preparation of new use permit applications.

The second method of ensuring continuing appropriateness of the use permit is establishment of periodic review of the operation. Periodic review is now commonly conducted for quarry permits in Alameda County; the Altamont Landfill, like quarries, involves an activity which is inherently long-term in nature. Review of the project would encompass changes in technology, law, public opinion, environment, etc., as well as evaluation of compliance with conditions of the use permit and jurisdictional agencies.

State solid waste management policy states that local jurisdictions should review their Solid Waste Management Plans at least every three years to ensure that the documents remain adequate in fulfilling their goals.[85] Alameda County's draft SWMP includes in its Action Program the task of establishing a plan review program for updating the plan every three years. It seems reasonable to provide for a similar time scale for a review of the Altamont Landfill, inasmuch as it would, in effect, comprise a major element in the County's solid waste management scheme. The review could then take into consideration, in addition to the items discussed earlier, the project's relationship to the County Solid Waste Management Plan as the latter is revised.

This alternative could reduce the potential adverse impact of the project upon resource recovery and energy by modifying the condition of approval to reflect future developments in these fields. It should be kept in mind that the project as proposed involves granting of a Conditional Use Permit for the life of the entire landfill operation. A combination of periodic review and a time limit on the use permit (to ensure that major changes in the project can be enforced and that periodic review does not become perfunctory over the years) is probably the most effective single action to assure continuing public benefit from the project.

4. Limit Landfill to Disposal of Alameda County Wastes

The project as proposed contains no provision for controlling the source of wastes to be disposed at the Altamont site. A condition could be placed on approval specifying that no major amounts of refuse originate from outside Alameda County. Failure to include such a stipulation would leave open the possibility of future contractual arrangements for waste disposal for other areas. Many of the impacts identified in this EIR would be aggravated, and other impacts created, which have not been considered at all, if this were allowed to occur without ample additional anlaysis. This EIR is based upon the assumption that only wastes from the County, specifically the Bay Plain urbanized area from Albany to Hayward, will be taken to the Altamont site.

D. No Project

This alternative would leave the project site in its present state with the physical environment and present use unchanged. The previously described impacts on the physical and cultural environments would be avoided.

The no project alternative would have a direct impact on solid waste disposal and disposal sites in the County. Since all disposal sites in the Central Metropolitan and Eden Planning Units (with the exception of the City of Berkeley) will be closed by 1977, waste generated therein will have to be dumped in one or two of the three remaining sites (Eastern Alameda County and Fremont; Turk Island only accepts dry waste and would not be of substantial utility for disposal of most municipal wastes generated in these areas).

The principal alternative site for disposal of those wastes is the Eastern Alameda County Disposal Site (EACDS). This is partly because the operator has expressed a willingness to accept these wastes and partly because the Fremont site is restricted by conditional use permit (which is contrary to State policy for solid waste management)[86] to receiving wastes generated only in Washington Township.

The EACDS is located on Vasco Road, norht of Livermore, about 29 miles from the proposed transfer station in San Leandro. The operation (canyon-fill) is similar to the Altamont proposal though not as large in scale; the site encompasses 297 acres of which 103 are proposed to be filled. Land uses in the surrounding areas are agricultural and residential, with five residences in the immediate vicinity of the site's access road.

The physical environment of the EACDS has not been studied in the same detail as the Altamont site so strict comparison is not possible. The site's location is entirely within the drainage of the Livermore Valley. Generally,

it is underlain by the same type of bedrock as the Altamont site (Panoche Formation), however, younger geologic units of greater permeability (including Tertiary Cierbo sandstone and the Livermore Formation) occur in close proximity to the site. Thus, the potential for leachate escape from the site is somewhat greater. The possibility of direct contamination of aquifers in the Livermore formation by contact with the dump, however, is rated low.[87] The potentially active Greenville Fault is located very close to the site and may even traverse a part of it.

Biotic conditions on site have not been inventoried. Cursory aerial photo-interpretation indicates that the dominant form of vegetation is annual grasses with large areas of dry cultivation, probably for barley. Those areas outside of the landfill operation or cultivation are used for cattle grazing. Since vegetal characteristics of the EACDS are similar to those on the Altamont site, it is expected that wildlife relationships are similar also. A field reconnaissance by qualified biological personnel would be necessary to be more definitive.

Overall visual effects of the EACDS have not been studied, however, the site would appear to be quite visible from Brushy Peak (NNE of the site), a potential recreational area.

Traffic along Vasco Road north of I-580 ranges from 2800 vehicles per day north of Northfront Road to about 1,300 VPD north of Dalton Road.[88] The addition of traffic intended for the Altamont site would not significantly affect operations on Vasco Road, but may create conflicts (primarily noise) with the numerous residences in the vicinity.

If the EACDS were to accept all waste generated in the County, except that generated in Washington Township, the capacity of the site under its present County approval would be exhausted in about 6 years. Since this overall disposal of EACDS could begin as early as 1977, the site could be filled by 1983. In addition, various physical and cultural impacts similar to those enumerated for the Altamont site would result from this alternative.

If the Fremont site were to be opened to accept wastes regardless of their geographic origin, the life expectancy of EACDS would increase to a little over 8 years, and the life of the Fremont site would reduce to 8 years.

This lack of long term land disposal capacity poses some difficult problems for future solid waste management in the County. Even if energy and materials recovery are operational in the early 1990's to the extent recommended by the Solid Waste Management Commission's Technical Advisory Committee, i.e. 67%, there will be an additional 33% of residual waste which will need to be disposed of on land. In addition, good solid waste management planning would also keep reserve capacity for periods when resource recovery may be interrupted.

With no Altamont project, the future (60-70 years) landfill capacity for the County is uncertain. Given the numerous environmental constraints applied to selections of a site suitable for disposal of Group 2 wastes, few areas of the County are suitable. A possibility exists that the EACDS could be expanded in the future since Ralph Properties owns substantial acreage adjacent and physically similar to the existing site operation. Detailed site studies have not been performed, however, leaving unknown the suitability and potential capacity of the adjoining areas.

IX. SHORT TERM/LONG TERM USE RELATIONSHIPS

The proposed project represents a solution to the long-term problem of disposal of Alameda County's solid wastes. As such, short-term disruptions in land use, earth-moving, and environmental impacts should be balanced against the necessity for suitable landfill sites. As discussed in this report in the summary of the County's draft Solid Waste Management Plan and in the Alternatives section, landfill capacity will be needed even if resource and energy recovery eventually reclaim most of the refuse now being dumped, since there would still be residual wastes from any process now being studied.

To the extent that approval of the project precludes or inhibits resource or energy recovery, long-term state and local goals in this direction would be adversely affected. In addition, refuse buried in landfill represents a loss of potential long-term recyclable resources.

The project is not in apparent conflict with the County General Plan, which calls for long-term commitment of the site to agricultural use, since the site will be returned to such use upon completion of the project.

Approval of the project involves a long-term commitment of labor both for project operations and for public monitoring.

X. IRREVERSIBLE IMPACTS

Irreversible environmental changes which would result from implementation of the project include:

- Loss of existing natural habitat in areas of fill or borrow on site;
- Changes in natural topographic and hydrologic character of the site;
- Changes in visual perception of the site;
- Increased runoff from roads and other paved surfaces;
- Commitment of energy resources and non-renewable construction materials; and
- If groundwater is degraded by leachate or carbon dioxide, the effects would be long-term and potentially irreversible.

XI. Growth-Inducing Impacts

The major growth-inducing impact of the project may arise from its removal of one constraint to growth: the limit of disposal capacities for solid waste produced by the Central Metropolitan and Eden Planning Units in Alameda County. In addition, the project could serve the same function for areas served by the Eastern Alameda County Disposal Site when that site is ultimately filled. Minor growth inducing impacts would result from the employment of personnel to manage site operations. This direct growth stimulant is not significant.

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APPENDIX A

CHEMICAL CHARACTERISTICS OF GROUNDWATER[1]
AT ALTAMONT LANDFILL SITE AND VICINITY

	Drinking Water Standards[2]	9N1	12N1	14C1	15M1	15R2	16E1	18J1	19A1	20H1
HARDNESS as $CaCO_3$, ppm	NS	340	550	472	334	900	252	1050	356	30
CALCIUM as $CaCO_3$, ppm	NS	158	220	200	170	550	140	548	190	20
MAGNESIUM as $CaCO_3$, ppm	NS	182	330	272	164	350	112	502	166	10
BICARBONATE as HCO_3, ppm	NS	342	537	512	386	170	295	275	568	537
CARBONATE, ppm	NS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
SULFATE as SO_4, ppm	250R	38	96	168	74	1766	36	80	68	2
CHLORIDE as Cl, ppm	250R	164	320	280	112	1950	70	785	104	770
SILICA as SiO_2, ppm	NS	22	24	26	23	46	20	23	25	13
NITRATE as NO_3, ppm	45R	12.7	13.4	1.8	5.4	< 0.5	10.5	8.84	8.4	0.5
FLUORIDE, ppm	1.7R	8.8	1.4	1.9	1.8	0.9	3.2	0.9	0.6	2.5
SODIUM, ppm	NS	101	228	248	105	1750	66	168	152	710
POTASSIUM, ppm	NS	1.5	2.5	2.7	2.2	16.5	2.5	6.1	2.1	2.8
IRON, ppm	0.3R	0.03	0.07	0.01	0.04	1.64	0.03	0.85	0.05	0.04
MANGANESE, ppm	0.05R	< 0.02	0.14	0.71	0.08	0.19	0.10	0.05	0.01	0.03
ALUMINUM, ppm	NS	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1	< 0.1	< 1
pH	NS	7.7	7.6	7.8	7.8	7.3	7.7	8.2	7.7	8.2
SPECIFIC CONDUCTANCE, micromhos	NS	1000	1900	1750	1020	8600	700	2400	1390	2600
Date Sampled		10/11/74	10/11/74	10/11/74	10/11/74	11/17/74	10/11/74	1/29/75	1/29/75	10/11/74

1. Samples analyzed by Ray W. Hawksley Co. Inc., Richmond, California
2. Limit of concentration in drinking water as determined by the U. S. Public Health Service, 1962; reported here as ppm; U.S.P.H.S. limits given as mg/1; R - recommended limit - primarily an aesthetic standard; M - mandatory limit-a health standard; NS - no standard established.

Source: Woodward-Clyde Consultants (1975).

APPENDIX A (Continued)

CHEMICAL CHARACTERISTICS OF GROUNDWATER[1] AT ALTAMONT LANDFILL SITE AND VICINITY

	Drinking Water Standards[2]	20J1	21C1	21C2	21C3	21E1	21E2	22E1	22E1	23Q1
HARDNESS as $CaCO_3$, ppm	NS	110	392	10	132	134	18	330	372	198
CALCIUM as $CaCO_3$, ppm	NS	48	200	1	90	58	8	140	124	100
MAGNESIUM as $CaCO_3$, ppm	NS	62	192	9	42	76	10	190	248	98
BICARBONATE as HCO_3, ppm	NS	441	431	480	403	632	512	525	561	610
CARBONATE, ppm	NS	< 1	< 1	187	< 1	< 1	120	< 1	< 1	< 1
SULFATE as SO_4, ppm	250R	110	84	10	20	52	1.8	144	139	172
CHLORIDE as Cl, ppm	250R	74	250	226	940	230	244	294	288	460
SILICA as SiO_2, ppm	NS	7.2	18	7.2	23	13	9.5	18	18	14
NITRATE as NO_3, ppm	45R	0.4	53.4	0.4	0.1	2.4	0.4	15.9	86.2	19.1
FLUORIDE, ppm	1.7R	0.9	1.0	1.51	1.3	3.0	1.24	1.8	1.51	1.9
SODIUM, ppm	NS	215	203	399	708	325	389	315	324	539
POTASSIUM, ppm	NS	2.0	1.6	0.9	3.1	1.9	1.2	2.8	1.8	3.5
IRON, ppm	0.3R	0.11	0.11	0.03	0.02	0.03	0.11	0.01	0.01	0.02
MANGANESE, ppm	0.05R	0.06	< 0.01	0.01	0.38	0.29	0.01	0.08	0.01	0.02
ALUMINUM, ppm	NS	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 0.1	< 1	< 0.1	< 1
pH	NS	8.2	7.6	8.9	8.28	8.2	8.6	7.7	7.6	7.8
SPECIFIC CONDUCTANCE, micromhos	NS	1200	1800	1800	3200	1700	1800	1800	2000	2500
Date Sampled		1/29/75	1/29/75	1/29/75	4/11/75	10/11/74	1/29/75	10/11/74	1/29/75	10/11/74

HEAVY METALS AND ORGANICS IN GROUNDWATER[1] AT ALTAMONT LANDFILL SITE AND VICINITY

HEAVY METALS	Drinking Water Standards[2]	9N1	14C1	15M1	16E1	18J1	19A1	20H1	20J1	21C1
LEAD, ppm	0.05M	0.062	0.038	0.055	0.048	0.024	0.021	0.022	0.050	0.022
MERCURY, ppm	0.002P[3]	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	< 0.001
BORON, ppm	NS	0.85	0.89	0.73	0.16	0.23	1.30	16.50	4.50	1.10
CADMIUM, ppm	0.01M	0.02	< 0.01	0.25	< 0.01	< 0.01	<0.01	< 0.01	0.012	0.010
ARSENIC, ppm	0.05M	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01
NICKEL, ppm	NS	0.050	< 0.02	< 0.02	< 0.02	0.022	0.020	0.025	0.045	0.035
CYANIDE, ppm	0.2M	<0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
CHROMIUM, ppm	0.05M	<0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
SILVER, ppm	0.05M	<0.02	< 0.02	< 0.02	< 0.02	<0.02	<0.02	< 0.02	< 0.02	< 0.02
ZINC, ppm	5.0R	1.110	0.135	1.70	0.320	0.020	0.412	0.027	0.150	0.062
COPPER, ppm	1.0R	0.170	< 0.01	< 0.01	< 0.01	<0.01	0.014	0.010	0.017	< 0.01
ORGANICS										
ABS[4], ppm	0.5R	<0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05
E. COLIFORM[5], M.P.N./100ml	NS	6		9	24	24000	24	<4.5	24	700
CHLORINATED HYDROCARBONS										
Hexachlorobenzene[6]	NS			0.0002	0.0003					
Date Sampled		1/29/75	10/11/74	10/11/74	10/11/74	1/29/75	1/29/75	1/29/75	1/29/75	1/29/75

1. Samples analyzed by Ray W. Hawksley Co. Inc., Richmond, California.
2. Limit of concentration in drinking water as determined by the U. S. Public Health Service, 1962. Reported here as ppm; U.S.P.H.S. limits given as mg/l. R - recommended limit - primarily an aesthetic standard; M- mandatory limit - a health standard; NS - no standard established.
3. The limit of concentration of mercury is, at present, a proposed (P) standard.
4. Alkyl benzene sulfonate - a synthetic detergent.
5. E. coliform, a micro-organism, is measured by most probable number (MPN) per 100 ml.
6. A fungicide; detection limit 0.0001 ppm. No open pesticides detected.

Source: Woodward-Clyde Consultants (1975).

APPENDIX B (Continued)

HEAVY METALS AND ORGANICS IN GROUNDWATER[1]
AT ALTAMONT LANDFILL SITE AND VICINITY

HEAVY METALS	Drinking Water Standards[2]	21C2	21C3	21E1	21E2	22E1	23Q1
LEAD, ppm	0.05M	0.020	<0.02	0.050	0.040	< 0.02	0.030
MERCURY, ppm	0.002P[3]	<0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
BORON, ppm	NS	9.15	28.0	5.8	8.70	2.75	3.60
CADMIUM, ppm	0.01M	<0.01	0.012	< 0.01	0.012	< 0.01	0.01
ARSENIC, ppm	0.05M	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01
NICKEL, ppm	NS	0.040	0.018	< 0.02	0.042	0.040	0.060
CYANIDE, ppm	0.2M	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01
CHROMIUM, ppm	0.05M	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01
SILVER, ppm	0.05M	<0.02	<0.02	0.650	< 0.02	< 0.02	< 0.02
ZINC, ppm	5.0R	0.020	0.10	0.198	0.098	0.035	0.420
COPPER, ppm	1.0R	0.012	<0.01	< 0.01	0.016	0.017	< 0.01
ORGANICS							
ABS[4], ppm	0.5R	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
E. COLIFORM[5], M.P.N./100ml	NS	240	<4.5	24000	24	24	62
CHLORINATED HYDROCARBONS							
Hexachlorobenzene[6]	NS						
Date Sampled		1/29/75	4/11/75	10/11/74	1/29/75	1/29/75	1/29/75

APPENDIX C

CHEMICAL CHARACTERISTICS OF GROUNDWATER[1]
NORTH OF ALTAMONT LANDFILL SITE

	Drinking Water Standards[2]	8B1	9A1	9B1	9L1	9M1	9M2	9N1	9P1	9Q1	9Q2	10E1
IRDNESS as $CaCO_3$, ppm	NS	280	232	314	796	282	300	275	330	295	484	115
ILCIUM as $CaCO_3$, ppm	NS	57	33	46	53	13	54	38	59	55	96	13
IGNESIUM as $CaCO_3$, ppm	NS	33	36	48	40	60	40	44	44	38	59	20
CARBONATE as HCO_3, ppm	NS	341	599	494	337	744	367	293	306	327	488	664
IRBONATE, ppm	NS	0	294	0	0	366	180	0	150	0	0	16
ILFATE as SO_4, ppm	250R	57	67	37	44	62	46	34	61	48	52	132
ILORIDE as Cl, ppm	250R	87	260	110	141	379	135	167	153	134	216	368
LICA as SiO_2, ppm	NS	19	16	13	15	5.8	12	18	18	18	17	7.9
TRATE as NO_3, ppm	45R	25	65	6.5	18	8.4	17	60	38	42	0.5	0.9
UORIDE, ppm	1.7R	0.7	2.9	1.9	1.3	3.7	1.4	2.0	1.2	1.1	1.2	1.7
DIUM, ppm	NS	91	343	136	110	431	117	135	104	115	126	501
TASSIUM, ppm	NS	1.7	1.9	6.4	2.6	3.0	3.5	1.8	3.1	1.6	4.8	4.4
RON, ppm	NS	0.9	4.0	2.1	0.8	5.0	0.98	0.7	0.42	0.9	0.59	4.6
[illegible]	NS	41	8.3	7.7	8.0	9.3	7.6	8.2	7.6	7.8	7.9	8.4
ECIFIC CONDUCTANCE, micromhos	NS	937	1870	1160	1050	2270	1080	1140	1090	1070	1460	2390
te Sampled		10/10/58	10/9/58	10/9/58	10/7/58	10/9/58	10/7/58	10/29/57	10/7/58	10/7/58	10/8/58	8/10/58

From California Department of Water Resources unpublished analyses.

Limit of concentration in drinking water as determined by the U. S. Public Health Service, 1962.
Reported here as ppm; U.S.P.H.S. limits given as mg/1. R - recommended limit - primarily an aesthetic standard; M - mandatory limit - a health standard; NS - no standard established.

Source: Woodward-Clyde Consultants (1975).

APPENDIX C (Continued)

CHEMICAL CHARACTERISTICS OF GROUNDWATER[1]
NORTH OF ALTAMONT LANDFILL SITE

	Drinking Water Standards[2]	10E2	10E3	10E4	10E5	10F1	10K1	10M1	10N1	11D1	16C1
HARDNESS as $CaCO_3$, ppm	NS	61	26	180	470	374	990	350	383	427	393
CALCIUM as $CaCO_3$, ppm	NS	8.3	5.8	22	62	43	186	67	66	86	77
MAGNESIUM as $CaCO_3$, ppm	NS	9.8	2.8	30	77	65	128	44	53	52	49
BICARBONATE as HCO_3, ppm	NS	720	798	600	897	660	588	364	522	357	350
CARBONATE, ppm	NS	11	18	8	0	0	289	179	0	0	0
SULFATE as SO_4, ppm	250R	122	160	102	1.8	235	398	89	358	86	68
CHLORIDE as Cl, ppm	250R	317	259	266	355	639	320	106	308	273	174
SILICA as SiO_2, ppm	NS	7.9	8.1	9.0	20	14	24	24	22	29	17
NITRATE as NO_3, ppm	45R	0.9	0.8	1.0	1.2	0.6	1.3	7.6	103	40	17
FLUORIDE, ppm	1.7R	1.3	1.9	1.5	3.6	1.6	1.0	0.9	1.9	0.8	0.8
SODIUM, ppm	NS	511	539	362	319	593	154	89	423	160	106
POTASSIUM, ppm	NS	4.2	3.0	4.2	12	4.6	8.0	2.2	1.8	1.4	3.8
BORON, ppm	NS	4.4	9.1	3.1	3.5	3.2	0.88	0.54	0.90	0.56	0.56
pH	NS	8.3	8.4	8.3	7.6	7.8	7.2	7.6	7.8	7.4	7.9
SPECIFIC CONDUCTANCE, micromhos	NS	2300	2310	1910	2380	3290	2360	1010	2530	1600	1210
Date Sampled		8/10/58	8/10/58	8/10/58	10/9/58	10/6/58	10/10/58	10/7/58	10/19/58	10/6/58	10/8/58

1. From California Department of Water Resources unpublished analyses.
2. Limit of concentration in drinking water as determined by the U. S. Public Health Service, 1962; reported here as ppm; U.S.P.H.S. limits given as mg/l; R - recommended limit - primarily an aesthetic standard; M - mandatory limit - a health standard; NS - no standard established.

Source: Woodward-Clyde Consultants (1975).

APPENDIX D

CHEMICAL CHARACTERISTICS OF SURFACE WATER[1] AT ALTAMONT LANDFILL SITE AND VICINITY

	Drinking Water Standards[2]	15A1	15Q1	16Q1	21G1	21H1	22C1
HARDNESS as $CaCO_3$, ppm	NS	400	450	220	470	530	460
CALCIUM as $CaCO_3$, ppm	NS	150	110	110	160	105	160
MAGNESIUM as $CaCO_3$, ppm	NS	250	340	110	310	425	300
BICARBONATE as HCO_3, ppm	NS	232	537	251	473	456	551
CARBONATE as $CaCO_3$, ppm	NS	120	168	53	154	307	130
SULFATE as SO_4, ppm	250R	167	155	112	105	175	140
CHLORIDE, ppm	250R	180	284	180	194	220	260
SILICA as SiO_2, ppm	NS	16	9	13	9	6	14
NITRATE as NO_3, ppm	45R	5.1	< 0.4	4.4	5.5	1.7	13.6
FLUORIDE, ppm	1.7R	0.5	0.9	0.9	0.85	0.90	0.94
SODIUM, ppm	* NS	142	317	180	197	271	285
POTASSIUM, ppm	NS	10.5	0.8	9.8	1.8	4.0	4.0
IRON, ppm	0.3R	0.15	0.03	0.19	0.04	0.03	0.52
MANGANESE, ppm	0.05R	0.11	< 0.01	0.02	0.04	0.07	0.69
ALUMINUM, ppm	NS	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
pH	NS	8.7	8.5	8.5	8.5	8.9	8.3
SPECIFIC COND. mmhos	NS	1390	2000	1210	1580	1900	2000
LEAD, ppm	0.05M	0.020	< 0.02	0.039	0.031	0.024	0.020
MERCURY[3], ppm	0.002P[3]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
BORON, ppm	NS	0.51	2.72	0.89	2.12	2.29	2.55
CADMIUM, ppm	0.01M	<0.01	< 0.01	0.01	0.015	< 0.01	< 0.01
ARSENIC, ppm	0.05M	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
NICKEL, ppm	NS	0.022	0.020	0.047	0.030	0.025	0.020
CYANIDE, ppm	0.2M	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
CHROMIUM, ppm	0.05M	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SILVER, ppm	0.05M	<0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
ZINC, ppm	5.0R	0.015	0.029	0.018	0.034	0.025	0.014
COPPER, ppm	1.0R	0.020	0.010	0.022	0.012	0.012	0.012
ABS[4], ppm	0.5R	<0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05
E. COLIFORM[5], M.P.N./100ml	NS	7000	2400	2400	7000	24000	7000
CHLORINATED HYDROCARBON PESTICIDES	NS	none detected	none detected	none detected	none detected	none detected	none detected
Date Sampled		5/5/75	5/5/75	5/5/75	5/5/75	5/5/75	5/5/75

1. Samples analyzed by Ray W. Hawksley Co. Inc., Richmond, California.
2. Limit of concentration in drinking water as determined by the U. S. Public Health Service, 1962; reported here as ppm; U.S.P.H.S. limits given as mg/l; R - recommended limit - primarily an aesthetic standard; M - mandatory limit - a health standard; NS - no standard established.
3. The limit of concentration of mercury is, at present, a proposed (P) standard.
4. Alkyl benzene sulfonate - a synthetic detergent.
5. E. COLIFORM, a micro-organism, is measured by most probable number (M.P.N.) per 100ml. Date sampled is 6/6/75.

Source: Woodward-Clyde Consultants (1975).

APPENDIX E

LIST OF PLANT SPECIES IDENTIFIED BY THE CONSULTING BIOLOGIST DURING A FIELD RECONNAISSANCE ON MAY 28, 1975

Soap plant	Chlorogalum pomeridianum
Grass nut	Brodiaea laxa
Mexican rush	Juncus mexicanus
Soft chess	Bromus mollis
Ripgut brome	Bromus diandrus
Foxtail brome	Bromus rubens
Spanish brome	Bromus madritensis
Saltgrass	Distichlis spicata
Creeping wildrye	Elymus triticoides
Hare barley	Hordeum leporinum
Mediterranean barley	Hordeum geniculatum
Common barley	Hordeum vulgare
Foxtail fescue	Festuca megalura
Perennial ryegrass	Lolium perenne
Annual ryegrass	Lolium multiflorum
Slender wild oat	Avena barbata
Wild oat	Avena fatua
Rabbitfootgrass	Polypogon monspeliensis
Foothill needlegrass	Stipa lepida
Bull mallow	Malva nicaeensis
Red-stem filaree	Erodium cicutarium
California poppy	Eschscholzia californica
Hedge mustard	Sisymbrium officinale
Field mustard	Brassica campestris
Curly dock	Rumex crispus
Bindweed	Convolvulus arvensis
Common monkey-flower	Mimulus guttatus
Purple owl's-clover	Orthocarpus purpurascens
Verbena	Verbena robusta
Western choke cherry	Prunus virginiana var. demissa
Lupine	Lupinus subvexus
Lupine	Lupinus nanus
Bur-clover	Medicago hispida
San Joaquin locoweed	Astragalus asymmetricus
Brewer's pea	Lathyrus sulphureus
Wild cucumber	Marah fabaceus
Common spikeweed	Hemizonia pungens
Mayweed	Anthemis cotula
Common yarrow	Achillea millefolium
Milk thistle	Silybum marianum
Bull thistle	Cirsium vulgare
Italian thistle	Carduus pycnocephalus
Barnaby's thistle	Centaurea solstitialis

APPENDIX F

LIST OF VERTEBRATE ANIMALS OCCURRING ON SITE BASED ON FIELD SURVEYS CARRIED OUT BY THE CONSULTING BIOLOGIST ON DECEMBER 31, 1974, JANUARY 23, 1975, FEBRUARY 12, 1975 and MAY 28, 1975

AMPHIBIANS

Tiger Salamander	_Ambystoma tigrinum_
Western Toad	_Bufo boreas_
Pacific Treefrog	_Hyla regilla_

REPTILES

Western Fence Lizard	_Sceloporus occidentalis_
Side-blotched Lizard	_Uta stansburiana_
Coast Horned Lizard	_Phrynosoma coronatum_
Gilbert's Skink	_Eumeces gilberti_
Southern Alligator Lizard	_Gerrhonotus multicarinatus_
Ringneck Snake	_Diadophis punctatus_
Racer	_Coluber constrictor_
Coachwhip	_Masticophis flagellum_
Glossy Snake	_Arizona elegans_
Gopher Snake	_Pituophis melanoleucus_
Long-nosed Snake	_Rhinocheilus lecontei_
Common Garter Snake	_Thamnophis sirtalis_
Western Black-headed Snake	_Tantilla planiceps_
Western Rattlesnake	_Crotalus viridis_

BIRDS

Turkey Vulture	_Cathartes aura_
White-tailed Kite	_Elanus leucurus_
Red-tailed Hawk	_Buteo jamaicensis_
Rough-legged Hawk	_Buteo lagopus_
Ferruginous Hawk	_Buteo regalis_
Golden Eagle	_Aquila chrysaetos_
Marsh Hawk	_Circus cyaneus_
American Kestrel	_Falco sparverius_
Killdeer	_Charadrius vociferus_
Mourning Dove	_Zenaida macroura_
Burrowing Owl	_Speotyto cunicularia_
Common Flicker	_Colaptes auratus_
Horned Lark	_Eremophila alpestris_
Common Crow	_Corvus brachyrhynchos_
American Robin	_Turdus migratorius_
Water Pipit	_Anthus spinoletta_
Loggerhead Shrike	_Lanius ludovicianus_
Starling	_Sturnus vulgaris_
House Sparrow	_Passer domesticus_
Western Meadowlark	_Sturnella neglecta_
Red-winged Blackbird	_Agelaius phoeniceus_
Brewer's Blackbird	_Euphagus cyanocephalus_
Brown-headed Cowbird	_Molothrus ater_
House Finch	_Carpodacus mexicanus_
Lesser Goldfinch	_Spinus psaltria_
Savannah Sparrow	_Passerculus sandwichensis_
Dark-eyed Junco	_Junco hyemalis_
White-crowned Sparrow	_Zonotrichia leucophrys_

MAMMALS

Audubon Cottontail	_Sylvilagus audubonii_
Black-tailed Jack Rabbit	_Lepus californicus_
California Ground Squirrel	_Sphermophilus beecheyi_
Botta's Pocket Gopher	_Thomomys bottae_
Heerman's Kangaroo Rat	_Dipodomys heermanni_
Western Harvest Mouse	_Reithrodontomys megalotis_
California Mole	_Microtus californicus_
Coyote	_Canis latrans_
Kit Fox	_Vulpes macrotis_
Gray Fox	_Urocyon cinereoargenteus_
Long-tailed Weasel	_Mustela frenata_
Badger	_Taxidea taxus_
Striped Skunk	_Mephitis mephitis_

APPENDIX G

AGENCIES, ORGANIZATIONS AND INDIVIDUALS REFERRED THE DRAFT EIR

KEY: D = Draft EIR

S = Summary of Draft EIR

D & S = Both Draft EIR and Summary

(2) = Number of Copies

Federal Agencies

U.S. Environmental Protection Agency
Region IX
100 California Street
San Francisco, California 94111
D & S

U.S. Army Corps of Engineers
100 McAllister Street
San Francisco, California
D & S

State Agencies

State Office of Intergovernmental Management
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814
D & S (20)

State Department of Water Resources
ATTN: James Welsh
1416 Ninth Street
Sacramento, California 95814
D & S

State Agencies (Continued)

Solid Waste Management Board
ATTN: Albert A. Marino
1416 Ninth Street
Sacramento, California 95814
D & S

State Department of Fish and Game
Region III
P.O. Box 47
Yountville, California 94599
D & S

State Water Resources Control Board
Division of Water Quality
1416 Ninth Street
Sacramento, California 95814
D & S

Regonal Agencies

California Regional Water Quality
Control Board
San Francisco Bay Region
1111 Jackson Street
Oakland, California 94607
D & S

Association of Bay Area Governments
Hotel Claremont
Berkeley, California 94705
D & S

East Bay Regional Park District
11500 Skyline Boulevard
Oakland, California 94619
D & S

California Regional Water Quality
Control Board
Central Valley Region
3201 "S" Street
Sacramento, California
D & S

Bay Area Air Pollution Control District
939 Ellis Street
San Francisco, California 94109
D & S

Local Agencies

Road Department
Alameda County Public Works Agency
399 Elmhurst Street
Hayward, California 94544
D & S (2)

Alameda County Flood Control and
Water Conservation District
Alameda County Public Works Agency
399 Elmhurst Street
Hayward, California 94544
D & S

Alameda County Sheriff's Department
Room 104, Court House
1225 Fallon Street
Oakland, California 94612
D & S

Alameda County Fire Patrol
1617 College Avenue
Livermore, California 94550
D & S

Alameda County Agricultural Department
Room 207
224 West Winton Avenue
Hayward, California 94544
D & S

Alameda County Solid Waste Management
Plan Advisory Committee
c/o H. Wolch, Chairman
18313 Pepper Street
Castro Valley, California 94546
D & S

Building Official
Alameda County Public Works Agency
399 Elmhurst Street
Hayward, California 94544
D & S

Alameda County Health Care Services
Agency
499 - 5th Street
Oakland, California 94607
D & S

Alameda County Office of Emergency
Services
2700 Fairmont Drive
San Leandro, California 94578
D & S

Alameda County Comprehensive Health
Planning Council
499 - 5th Street
Oakland, California 94607
D & S

Alameda County Parks Advisory Commission
399 Elmhurst Street
Hayward, California 94544
D & S

Eden Health Advisory Council
ATTN: Dr. Smith
15400 Foothill Boulevard
San Leandro, California 94578
D & S

Local Agencies (Continued)

City of Alameda
City Hall, Room 135
Santa Clara and Oak Streets
Alameda, California 94501
D & S

City of Berkeley
City Hall
Allston Way and Grove
Berkeley, California 94700
D & S

City of Fremont
City Hall
39700 Civic Center Drive
Fremont, California 94536
D & S

City of Livermore
City Hall
2250 First Street
Livermore, California 94550
D & S

City of Oakland
City Hall
14th and Washington Streets
Oakland, California 94612
D & S

City of Pleasanton
City Hall
200 Bernal Avenue
Pleasanton, California 94566
D & S

City of Albany
City Hall
1000 San Pablo Avenue
Albany, California 94706
D & S

City of Emeryville
City Hall
2449 Powell Street
Emeryville, California 94608
D & S

City of Hayward
City Hall
22300 Foothill Boulevard
Hayward, California 94541
D & S

City of Newark
City Hall
37101 Newark Boulevard
Newark, California 94560
D & S

City of Piedmont
City Hall
120 Vista Avenue
Piedmont, California 94611
D & S

City of San Leandro
City Hall
835 East 14th Street
San Leandro, California 94577
D & S

Local Agencies (Continued)

City of Union City
City Hall
1154 Whipple Road
Union City, California
D & S

Oro Loma Sanitary District
P.O. Box 95
San Lorenzo, California 94588
D & S

East Bay Municipal Utility District
P.O. Box 24055
Oakland, California 94623
D & S

County of Contra Costa
County Administration Building
Martinez, California 94553
D & S

County of San Joaquin
222 E. Weber Street
Stockton, California 95205
D & S

City and County of San Francisco
City Hall
San Francisco, California 94102
D & S

Valley Community Services District
General Manager
7051 Dublin Boulevard
Dublin, California 94566
D & S

Castro Valley Sanitary District
21040 Marshall Street
Castro Valley, California 94546
D & S

Livermore-Amador Valley Water
Management Agency
200 Bernal Avenue
Pleasanton, California 94566
D & S

County of Santa Clara
County Administration Building
70 West Hedding Boulevard
San Jose, California
D & S

County of San Mateo
County Government Center
Redwood City, California
D & S

County of Solano
County Courthouse
Fairfield, California
D & S

Other Groups, Organizations or Individuals

Oakland Scavenger Company
2601 Peralta Street
Oakland, California 94607
D & S (5)

Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
2730 Adeline Street
Oakland, California 94607
D & S

Dr. Albert Miller
Meteorology Department
San Jose State University
San Jose, California
D & S

Mr. John J. Forristal
Traffic Engineer
3320 Grand
Oakland, California
D & S

Pacific Gas and Electric Company
24300 Clawiter Road
Hayward, California
D & S

Bissell & Karn, Inc.
Civil Engineers
2551 Merced Street
San Leandro, California 94577
D & S

Dr. Philip Leitner
Biology Department
Saint Mary's College
Moraga, California 94575
D & S

Dr. David A. Fredrickson and Peter M. Banks
Anthropology Department
California State College, Sonoma
Rohnert Park, California
D & S

Mr. John P. Corley, Attorney
1056 Division
Pleasanton, California 94566
D & S

Pacific Telephone and Telegraph Company
26212 Industrial Boulevard
Hayward, California
D & S

Other Groups, Organizations or Individuals (Continued)

Joint Refuse Rate Committee
c/o Jennings Smith
Oakland City Hall
14th and Washington Streets
Oakland, California 94612
D & S

Congress of Valley Agencies
2250 First Street
Livermore, California 94550
D & S

Sierra Club
5608 College Avenue
Oakland, California 94618
D & S

Berkeley Ecology Center
2179 Allston Way
Berkeley, California
D & S

Livermore Recycling Center
c/o Lois Hill
874 Adams Avenue
Livermore, California 94550
D & S

Preserve Area Ridgelands Committee
1262 Madison Avenue
Livermore, California 94550
D & S

Bay Area League of Women Voters
Claremont Hotel
Berkeley, California 94705
D & S (3)

Livermore League of Women Voters
P.O. Box 702
Livermore, California 94550
D & S

Audubon Society
c/o William Hurd
2754 Olive Avenue
Fremont, California
D & S

Valley Ecology Center
401 South "K" Street
Livermore, California 94550
D & S

Political Action Coalition for the Environment
509 Athol #3
Oakland, California 94606
D & S

Medford Gardens Improvement Association
ATTN: Mrs. Albers
2037 Mavina Court
San Leandro, California 94577
D & S

Other Groups, Organizations or Individuals (Continued)

Alameda County Farm Bureau
638 Enos Way
Livermore, California 94550
D & S

Mr. James W. Trimingham
4419 - 2nd Street
Pleasanton, California 94566
S

Mr. James Dahl
Kaiser Sand & Gravel
P.O. Box D
Pleasanton, California 94566
D & S

Dr. Arthur C. Smith
California State University at Hayward
Department of Biological Sciences
Hayward, California 94542
S

Southern Alameda County Board of Realtors
2114 Mission Boulevard
Hayward, California 94544
S

Mr. Douglas Albert
Dry Bulk Engineers
P.O. Box 1011
Grand Lake Station
Oakland, California 94610
S

Ms. Jean B. Byrens
6115 Chabot Road
Oakland, California 94618
S

Associated Homebuilders of the
Greater East Bay
Hotel Claremont
Berkeley, California 94705
S

East Bay Chapter of California
Council of Engineers and Land Surveyors
c/o Robert Floyd
P.O. Box 287
Walnut Creek, California 94596
S

California Refuse Removal Council
Northern District
c/o Lawrence A. Zunino, President
Solano County
Valejo Garbage Service
710 Marin Street
Vallejo, California 94590
S

Other Groups, Organizations or Individuals (Continued)

Pleasanton Garbage Service
P.O. Box 399
Pleasanton, California 94566
D & S

Turk Island Company
Neptune Drive
San Leandro, California 94577
S

DePaoli Equipment Company
c/o Ralph Properties
4001 Vasco Road
Livermore, California 94550
D & S

Newspapers

The Livermore Independent
2219 A First Street
Livermore, California 94550
D & S

Oakland Tribune
Tribune Tower
Oakland, California
D & S

Tri-Valley Herald
Livermore Office
325 South "I"
Livermore, California 94550
D & S

The Montclarion
6208 La Salle Avenue
Oakland, California
D & S

Valley Times
6908 Village Parkway
Dublin, California 94566
D & S

The Daily Review
116 W. Winton Avenue
Hayward, California 94544
D & S

Pleasanton Times
P.O. Box 188
Pleasanton, California 94566
D & S

Berkeley Daily Gazette
2049 Allston Way
Berkeley, California
D & S

Newspapers (Continued)

Alameda Times Star
1516 Oak Street
Alameda, California 94501
D & S

Alameda County Observer
991 Williams Street
San Leandro, California 94577
D & S

Portuguese Journal
3240 East 14th Street
Oakland, California
D & S

San Francisco Chronicle
925 Mission Street
San Francisco, California 94103
D & S

San Francisco Bay Guardian
1920 Bryant Street
San Francisco, California 94110
D & S

Albany Times
1420 Solano Avenue
Albany, California
D & S

The Argus
37070 Fremont Boulevard
Fremont, California
D & S

The Piedmontek
P.O. Box 11095
Oakland, California 94611
D & S

San Francisco Examiner
110 Fifth Street
San Francisco, California 94103
D & S

Libraries

Business and Government Library
Montgomery Street
Hayward, California 94541
D & S

Alameda Public Library
9th and Santa Clara
Alameda, California 94501
D & S

Libraries (Continued)

Berkeley Main Library
Shattuck Avenue and Kittridge
Berkeley, California 94501
D & S

Oakland Main Library
125 - 14th Street
Oakland, California 94600
D & S

San Lorenzo Library
395 Paseo Grande
San Lorenzo, California 94580
D & S

Niles Library
150 "I" Street
Fremont, California 94536
D & S

Irvington Park Library
41825 Blacow Road
Fremont, California 94536
D & S

Fairmont Library
15400 Foothill Boulevard
San Leandro, California 94578
D & S

Castro Valley Library
20055 Redwood Road
Castro Valley, California 94546
D & S

San Leandro Public Library
Community Library Center
300 Estudillo Avenue
San Leandro, California 94577
D & S

Union City Library
33942 Alvarado-Niles Road
Union City, California 94587
D & S

Pleasanton Library
4333 Black Avenue
Pleasanton, California
D & S

Newark Library
37101 Newark Boulevard
Newark, California 94560
D & S

Fremont Library
39770 Paseo Padre Parkway
Fremont, California 94536
D & S

Dublin Library
6936 Village Parkway
Dublin, California 94566
D & S

Livermore Library
1000 South Livermore Avenue
Livermore, California 94550
D & S

Libraries (Continued)

Albany Branch Library
1260 Solano Avenue
Albany, California 94706
D & S

Chabot College Library
Hayward Campus
25555 Hesperian Boulevard
Hayward, California
D & S

Library
California State University at Hayward
25800 Hillary
Hayward, California 94544
D & S

Chabot College Library
Livermore Campus
3030 Collier Canyon Road
Livermore, California 94550
D & S